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NEWS IN BRIEF

Wider use of networks

PROFESSOR Michael Beesley has presented his report on the economic implications of liberalising the use of British Telecom's transmission networks, to the Department of Industry. A DoI spokesman said that people in the Department would now look at the report and take action where necessary, including on whether to publish any of it.

Professor Beesley is to speak at Infotech's conference on public data networks in London from March 9 to 11.

New Sunday paper

PLANS by the owners of the Daily Mail to start a new Sunday newspaper could give new technology in Fleet Street a major boost. Although the proposal by Associated Newspapers is still tentative, managers there are convinced that a new publication would not be started using old technology, and are envisaging editorial and printing work being carried on in different buildings, connected by communications links.

Takeover bid fails

A SHARE swap takeover bid by Data General for graphics display manufacturer Megatek, originally valuing the San Diego company at \$17 million, has been rejected. But Megatek has denied that its reason was the fall in the value of Data General shares.

NY fire was arson

THE fire at the Stouffer's Inn hotel in suburban New York from which several IBM executives escaped late last year has been declared a case of arson by officials of Westchester County. The fire killed 13 executives of Arrow Electronics, the biggest components distributor in the US.

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COMPUTER WEEKLY

Tran brings down Amdahl profits

A SLIGHT profit decline for fiscal 1980, ended December 26, has been reported by Amdahl in a set of results for the year that show turnover up by 23% to \$394 million compared with 1979. The figures for both years published by Amdahl include the results of Tran, the data communications manufacturer acquired by Amdahl in July 1980.

According to Amdahl, Tran was making a positive profit contribution by the fourth quarter of 1980 compared with losses that

would have caused the combined companies to record a \$1.3 million loss in the 1979 fourth quarter.

The combined results for 1980 show a net profit figure down \$200,000 to \$15.2 million, suggesting that Tran continued to make serious losses well into 1980. No separate 1980 turnover figures for Tran were made available by Amdahl but Tran's own results for 1979 showed a turnover of about \$22 million.

Based at Marina del Rey, California, Tran builds the M3200 integrated digital network system which can carry voice, facsimile and image information as well as data. It can be used in an IBM Systems Network Architecture environment.

Another big development for Amdahl in 1980 was the November launch of the 580 series, its response to the IBM 3081. At the same time, purchase prices on the existing 470 machines were cut by 17%.

Pressure grows for UK data protection law

by Rory Johnston

PRESSURE on the Home Office to take action on data protection has now reached such a level that the Department is expected finally to break its long silence on the subject and make its intentions clear.

Several MPs and even a senior civil servant from the Department of Industry are now calling for legislation, and the British Computer Society has formally offered to operate a data user registration scheme in the absence of a Data Protection Authority.

Roy Croft, deputy secretary at the Department of Industry, told

the Computing Services Association that data protection legislation was now "vital" for the UK "to remain competitive in international business."

He added, however, that the legislative calendar was so crowded that it was unlikely an Act could be passed in this session.

Conservative MP Dudley Smith is tabling Parliamentary questions to the Home Secretary about the government's intentions regarding the Council of Europe's convention on data protection. Smith is a representative to the Council and was present last week at the signing of the convention by seven countries, indicating their intention to ratify it in their Parliaments

and so bring it into effect.

The countries that have signed so far are Denmark, West Germany, Sweden, France, Luxembourg, Austria, and Turkey. A country is not allowed to sign unless it has domestic legislation on data protection; other nations that have indicated their intention to legislate and then sign are the Netherlands, Belgium, Italy, and Switzerland.

The UK government agreed to the draft convention in October, but has taken no further action.

Also on the international front, privacy pressures in France have forced the government there to drop plans for a machine-readable personal identity card that was to

act as a surrogate passport, enabling quick checking of travellers at border crossings. A new plastic card with elaborate guards against forgery has been produced, but without the magnetic stripe that it was to have carried.

The main objection to the magnetic stripe was that it was not naked-eye-readable, and could therefore contain information of which the bearer was not aware. In consequence it was suggested that the printed information on the card should be in OCR font so it could be machine-read by optical scanning, but even this idea was opposed by the National Committee for Informatics and Liberty, and consequently dropped. The card is not in theory obligatory for citizens to carry, but a new law requiring some means of identification has just been passed.

The BCS is offering its services to operate an organisation to issue licences to organisations wishing to hold files of personal data, and to register individuals who keep such files. Overseeing the professional structure of the processing and laying down standards would be involved, according to the BCS Privacy Committee's plans.

Telephone selling in IBM market

by Claire Gooding

AMERICAN-STYLE selling is coming to the UK with Computer Associates' Express Software venture. The new marketing operation, based on telephone selling and direct mailing, is part of a major new sales drive in Europe

aimed at Computer Associates' traditional IBM market.

According to Harry Gordon, CA's new UK managing director, Express software will sell products in the systems performance and program development field, "typically under £2,000". "We're

aiming at a low-overhead, high volume operation," he comments.

CA claims to have installed over 10,000 products in 50 countries - at the rate of 300 monthly - and expects this year's sales to double its turnover to \$20 million, including £1 million from the UK.

Top-end extension to ICL 2900s

ICL has added to the higher end of the 2900 family with the 2977, a system that offers 12% more power than the existing 2976 and 50% more than the 2966 launched late last year.

At the same time, the company has announced the availability on the 2955, the other new 2900 launched last November, of VME/B-B; the stripped-down "simple use, quick to install" version of VME/B.

Differences between the 2977 and the 2976 include a 16K-byte cache store, restricted so far to the top-end 2982, 424 current page registers compared with only 16 on the 2976, and an address translation unit that operates simultaneously with the rest of the logic to achieve faster throughput.

ICL says that the air-cooled 2977 is aimed at the same market segment as the 3033S, the bottom end machine in the IBM 3033 family. It quotes £1.2 million for a 2977 configuration with a six-megabyte main memory and 3,200 megabytes on disc.

Main memory can be expanded to a maximum of 16 megabytes and options include the Distributed Array Processor. Scientific processing can also be boosted by

adding the fast multiply and divide unit to the Order Code Processor.

The 2977 OCP is based on the original 2980 OCP, like the OCPs in the 2976 and 2982, and the new machine slots into the Common Storage System range of 2900s that can be enhanced from the 2960 right up to the 2982.

The 2966 is the one exception because it employs the Store Control Unit and Device Control Unit used with the smaller 2900s rather than the Store Access Control Unit and Store Multiple Access Control Unit common to all the CSS machines.

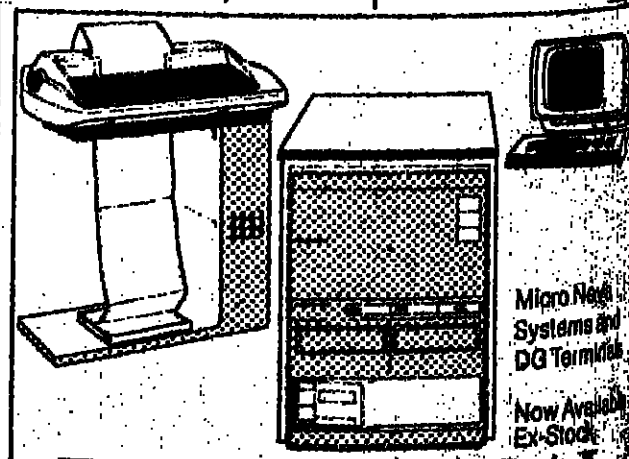
For DMB users moving over to VME, the 2977 can be run with a 2960 using the attached emulation facility. The 2977, like the other big 2900s, is not a microcoded machine and therefore does not support either DMB or Concurrent Machine Environment. CME is the facility, available on the 2966 downwards, which enables DMB and VME workloads to be run together.

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Burroughs brings in an outside

FINANCIALLY troubled Burroughs is taking advantage of a new early retirement programme to replace its existing executive vice-president of engineering and manufacturing operations, L. Cali. The new man is Paul F. Haher, who was formerly president of commercial electronics operations at Rockwell International.

Cali is expected to leave March at the age of 58 and Haher has been reported as describing his departure as "amicable". Cali apparently has no early retirement savings. At the same time the new Burroughs chairman, Michel L. Blumenthal, is believed to have severely criticised the company's manufacturing operations.

The appointment of Haher is in line with Blumenthal's policy of bringing new blood into the company from outside. Last month he appointed as vice-president of the Burroughs Jerome Jacobson, as vice-president of strategic planning.

Till Blumenthal took over normal practice to fill top jobs in the company from within. Burroughs has reported a nearly \$60 million loss in the quarter of 1980, which is a profit for the whole of 1979, but \$82 million, more than \$100 million down on the 1978 figure. The loss related to a million write-off of obsolete returned machines.

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CONFERENCE FIRM FAILS WITH DEBTS OF OVER £700,000 AND 113 OUT OF JOBS

Infotech goes into liquidation

by Paul Flaher

INFOTECH LTD, the Maidenhead-based training, publishing and conference company, went into voluntary liquidation on Friday. As a result 113 people have lost their jobs.

Its debts are between £700,000 and £1 million and estimates are that creditors will receive between 7p and 15p in the pound. The creditors include Trust House Forte, Grand Metropolitan Hotels and a number of lecturers, some of whom are owed several thousand pounds.

Chairman Clive Wilkins, who has been with the company since its early days in 1970, blames the recession and the fact that many expected orders had not materialised.

He says: "We were geared up for growth and it was difficult to gear down."

The company has been expanding at an annual rate of 50% since

1975 and last year's turnover was £3 million.

Wilkins adds: "The real sadness is in the breaking up of several remarkable teams of people. It is mitigated, however, by the fact that they will readily find acceptance on the open market."

Sources within the company say that the speed of the crash came as a surprise. Wilkins acknowledges that an increase in European business, to offset a decline in the UK, has happened too late to make any difference.

Legal action

The demise of Infotech, the largest company of its kind in Europe, will leave a void in the training market. Companies like Commercial Union, SAS, Swissair and Den Danske Bank stand to lose considerable sums that have been paid for advance bookings. Texas Instruments could lose well over £10,000.

There were problems early in 1980 with legal action over the copyright of lectures belonging to a major contractor, Keith Jackson, now of CMS. He was recently paid £15,000 of a total £30,000 which was agreed to be owing. "His decision to claim the money sped up the closure," says Wilkins.

Jackson is claiming a further £90,000 for advanced bookings until the end of 1981. A boardroom split at the end of the summer saw three directors leave to form Xephon Technology. Roy Goodman, the founder, used his major shareholding to assert himself on the board and, in the spring, appointed himself chairman and managing director. The dispute was patched up with Goodman having two-fifths of the voting rights and Wilkins plus fellow directors John Blake and Chris Boon splitting the remainder

• Turn to page 16

IBM 'growth' is no growth

by Hesh Wiener, Technology News of America
THE IBM annual report, due for release in about ten days' time, shows that inflation in the US has cut shareholders nearly one-third of the marketable value of their shares.

Adjusting for inflation using the 1980 dollar as a constant, the IBM share was worth \$67.88 on December 31, 1980. On the same basis the share was worth \$73.9 in 1979, \$94.26 in 1978 and \$101.1 in 1977.

The report shows that with inflation taken into account the earnings improvement in 1980 was actually a fall on the previous figures of \$78 million, from \$2,551 million to \$2,473 million, adjusted for inflation.

The volume of machines and parts on rental leaped by from \$1,610 million in 1978 to \$15,352 million, showing an overall increase in rental of 31% for the last two years.

Working capital at IBM fell from \$4,406 million to \$3,399 million over the year.

Borrowings over the past two years were \$2,000 million and the company still has unused credit lines of \$2,875 million. According to the company there is a requirement for significant investment in the years ahead. This comment is taken by commentators to mean that IBM will be making further borrowings in 1981.

The number of employees rose to 341,729 from 337,119 in 1979. There was a big jump in earnings in the European, African and Middle East division, from \$1,082 million in 1979 to \$1,511 million in 1980.

Noting that \$207 million of net earnings were due to year end tax changes in the US, the report said that the company expected "the cost of investment to be high with continuing pressure on margins."

Government plans to draft in other staff to run computers were condemned by Tony Christopher, general secretary of the Inland Revenue Staff Federation, saying such action could make working conditions after the dispute very difficult.

He was also afraid that "irresponsible elements" in his union could be provoked into sabotaging the computers, which would lead to expulsion from the union.

In the separate dispute over pay for health service computer staff, a halt has been called to one-day selective strikes while investigations are carried out on how much money is available.

Operation of accounting systems is still being blocked, however.

Govt ducks MP's question on aid to ICL

THE government has refused to give any assurance that it will rescue ICL should the company's problems get worse.

Replying to questions on Monday from MPs on both sides of the House of Commons about whether he would guarantee the future of the company, Information Technology Minister Kenneth Baker replied only that he "had had no formal request for aid."

Tory MP Hugh Dykes asked if the government intended "to do anything about ICL or was going to stand idly by."

Baker replied, "I've heard nothing from the company," but added that the cuts are supported by chairman Philip Chapman. Mr Dykes was "necessitated to

strengthen the company."

He went on: "My department is in consultation with ICL over its R&D programme as with other companies."

It seems now very unlikely that the government will bring ICL back under the wing of the National Enterprise Board, as some reports have suggested.

A group of MPs including Robert Carr (Lab), Stokes-Dreyfus (Cons) have written to Secretary Sir Keith Joseph about ICL, saying, "The time for intervention is now," and asserting it would be "a tragedy if ICL were relegated to the status of a third-rate computer company."

The firm's problems may soon become "insuperable," they said.

Software growth

RENTED software is on the increase according to a survey by the National Computing Centre. The survey, supported by the Department of Industry, found that expenditure on software in 1981 would be 50% up on the 1979 figure to £74 million.

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JOB OPPORTUNITIES: Pages 26-47



WILKINS... "The real sadness is in the breaking up of several remarkable teams of people."

Briefing

Memorex \$29m loss

MEMOREX Corp last week delivered its expected loss for the year and for the final quarter of 1980. The loss for last quarter was \$3.2 million and the loss for the year as a whole was \$29 million.

Turnover at Memorex grew by \$31 million, from \$737 million in 1979 to \$768 million in 1980.

Chairman C. W. Spangle said the fourth quarter was the second consecutive improvement per quarter, despite the loss.

First in Europe

AFTER running a Xerox 9700 high speed laser printer on a trial basis for a year, service bureau Scan Laser Printing has bought the machine and ordered a second for shipment next month. Located at Scan Laser centres at London and Slough they will be the first two 9700 installations in Europe.

WP institute

A PROFESSIONAL Institute for word processor operators is being set up by a group of WP supervisors, managers and consultants to "promote and uphold professional standards." The Institute of Word Processing has opened an office in London and is drawing up plans for exams and training.

NAS move

FOLLOWING the launch by IBM of the 3081 which roughly matches the performance of the single processor Hitachi M200H, National Advanced Systems is to sell the dual processor M200H in IBM compatible form as the AS/9000 DFC. The single processor M200H is already sold by NAS, BASF and Olivetti Computers.

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COMPUTERVIEW

IN less than ten years, the world market for speech synthesis could reach \$4 billion, says National Semiconductor. This figure has been echoed by Texas Instruments which puts the market value at a slightly lower \$3 billion at the end of the decade. These similar opinions from two of the major entrants in the market both reflect the degree of importance that should be given to speech synthesis over the next few years - or do they?

Media reports have spoken convincingly of the virtues in making all sorts of machines repeat the same phrases time after time. But how many of us would really like to hear "Have you fastened your seat belt", every time we enter our cars, or "The time is 7.30, your tea is ready" whenever we wake in the morning?

In fact, the enthusiasm given to speech synthesis by US and Japanese companies could be interpreted purely as a race for scientific achievement. It is always satisfying to a scientist or engineer to achieve the so-called "impossible" regardless of its practicality.

The current stage of development reached by US companies certainly fosters this impression. National Semiconductor recently gave a presentation incorporating demon-

Talking machines

strations along the lines previously mentioned: a speaking tea machine, car and doll; and speaking games and scientific equipment. Texas Instruments has incorporated speech into its personal computer, the 99/4, and other educational toys and games such as Speak and Spell.

With a little more thought, the true potential of speech synthesis can be realised. Companies concentrating on its development are unfortunately not in a position to demonstrate this potential.

Awareness of and enthusiasm for speech synthesis will not emerge to any great extent until interfaces and applications have been developed to go with it.

At the moment the use of speech to attract attention gives no more information than other indicators such as buzzers and flashing lights. It is to this area that greater thought must be directed, and there is no reason why the incorporation of speech within a product should not greatly enhance the information output.

The simple car example of "Have you checked your oil" could, with the addition

of sensing circuitry, be modified to say "Your oil level is low, add two pints" or "The fuel will last another 10 miles at your present speed".

Many other applications exist and National Semiconductor has named but a few. Fire alarm systems in buildings could incorporate speech to say exactly where the fire is, which stairs or lifts to use and which not, or even give directions to assist people's exit from the building.

Speech has numerous applications in telecomm. For example, when a caller tries to reach a person at a number, the telephone could speak a message stating where that person could be contacted, or when the person was likely to return to the original number.

Speaking machines are, of course, invaluable to the blind and could help them to participate in activities which at the moment are not available to them. With the aid of a voice, blind people could learn how to operate equipment. Their mistakes could be verbally communicated. On a more domestic level, a speaking clock could certainly

make a blind person's life more efficient. Other applications exist in a variety of areas: supermarket check-out systems, in the medical diagnostics world, and in the prevention of accidents.

However, there is another reason for the development of speech synthesis - speech recognition. Speech recognition in practice involves comparing a spoken word or phrase to those stored in memory and choosing the most similar in order to make the correct response. The complexity of the system required depends on the size of the word store.

The Japanese are fast developing both synthesis and recognition to assist in the word processing. A keyboard is almost a physical impossibility for the Japanese alphabet, as it involves thousands of characters. The incorporation of speech recognition eliminates the need for a keyboard.

With a need as important as this, the Japanese almost certainly have reached the same level of development as the US companies, and have probably got further. National Semiconductor expects to have developed a speech recognition module by 1983.

LETTERS to the EDITOR

The creation of information

MAY I attempt to throw in a fresh point of view into the debate between Alan Sutcliffe and Donald Michie? (CW, January 8).

Let us first try this definition of what we mean by "information". All entities interact with their environment, actively or passively. This interaction is achieved by transfer of information across the interfaces between the entity and the environment.

Thus, a hot body communicates by emission (radiation) of heat energy. This energy may therefore be regarded as constituting information. The knowledge thus transmitted in this rudimentary case is the existence of the hot body.

Equally, the transmission may take the form of light waves or other electromagnetic radiation. A radio receiver having a DC meter in its detector circuit can determine the existence of a remote radio transmitter, by reception and indication of its carrier. This information (of "existence") may itself be "news" and so satisfy one accepted criterion for "information".

If, however, the carrier be modulated in a manner which has significance ("meaning") to the receiving body, the information content of the transmission is profoundly enhanced.

Please note that the receiving body does not require to possess that which we term "intelligence" for the receipt of the information to be effective. For example, a level detector at a water reservoir might cause a signal to be sent to a remote control valve, which is opened if the water level falls below a predetermined value.

Has information been created in this very simple case? Firstly, information on water level is conveyed to the level-sensor device. If the information is created here, it must be at this interface. Therefore, it is merely a matter of extending the transmitter and subsequent decoding at the receiver.

Now, suppose a second receiver, not part of the system, also detects the carrier and the "one-bit" or other modulation corresponding to the water level indication. If this second receiver has no previous knowledge of the significance of this signal, then it cannot be said that effective information (knowledge) has been conveyed.

The creation of information is thus inseparably bound up with the significance attributed to that information.

Returning to the reservoir as an example, calling within its environment, if an interface other than

Survey of operators' salaries

WHILE I do not disagree with Paul Fisher's article (CW, January 22) it is important that the pertinent facts are revealed when salary surveys are compared. In his article he gives prevalence to a particular survey which is based on the result of enquiries in 132 companies. The Computer Users' Year Book salary survey is mentioned, but the fact that the survey covered operators in 1,433 computer installations is not revealed, nor is there any mention made that the CUYB analysis comprised 3,015 operators and 1,417 senior operators.

Although bigger does not necessarily mean better, it seems to me that your readers would be better served if the pertinent facts were revealed so that they could judge the credibility and value of a particular survey.

ROBERT GRANT
Editorial director
Computer Users' Year Book
Bournemouth

Search for a book

CAN any of your readers help me in my search for the book The Great Computer, by Alaf Johansson, originally published by Gollancz in 1968?

This book is out of print but if anybody has a copy which they would be willing to let me have I should be truly grateful.

STEVE SHIRLEY (Mrs)
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Yet another set of symbols

CONCERNING Mr Atherton's article (CW, January 22), is it fair to introduce yet another set of symbols, and then call them "conventional"? The prospect is tempting, and also, especially in education, self-serving. But is it justified?

Is it liable to influence the people who matter to the students? I don't mean their teachers, but their prospective employers? If so, then it must be a good idea, but I remain to be convinced. This is not meant to be a "knocking", but a plea to be positive. The idea can be good, it must be practical.

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New ABS company bids for slice of handprint terminal market

A THIRD contender is now bidding for a share of the "handprint" terminal market pioneered by Quest Automation with its Datapad. The firm, CTS Recognition, is owned by small business systems manufacturer ABS Computers. Formerly called Allied Business Systems, ABS is owned by the Trafalgar House conglomerate.

The CTS terminal, called Telepad, employs a unique character sensing technique at Salford University under ABS sponsorship. A coil inside the writing pen transmits a low frequency sine wave signal that is picked up by an electronic grid under the writing surface. As a character is written the grid generates a stream of X-Y co-ordinates for processing by character recognition software developed at Cranfield Institute of Technology.

He said that there were problems with "sag" in the resistive layers above that size on the Quest product.

Offering the same benefits over Quest terminals is the Data Tablet from Image Data of Bristol, the third contender in the handprint data entry market. The Data Tablet employs a pen with a magnetic flux generator, changes in the flux being detected by electronics inside a three millimetre thick tablet. The technique was developed at Hatfield Polytechnic.

Telepad and Data Tablet can both be supplied with a touch-sensitive keyboard for entering non-written characters and both offer the capability to digitise drawings.

On the marketing side Quest has a big lead over its two competitors, having picked up customers all over the world, including the US. Image Data, which launched the Data Tablet just over a year ago, now has distributors in most European countries and also in the US, according to managing director Jimmy James.

John Bendall said that CTS was seeking distributors in Western Europe, but was not prepared to tackle the US market yet. He hoped that deliveries of Telepad would start in about three months, manufacturing being handled by the ABS factory at Brighton.

ABS managing director John Eliden said that his company had been looking for investment opportunities when it decided to back Telepad. Development was helped by a £25,000 grant from the Department of Industry.

Private money line?

BRITISH Telecom could be allowed to borrow from private sources and above its Public Sector Borrowing Requirement limit under an amendment to the British Telecommunications Bill accepted by the government last week, during the committee stages of the Bill's parliamentary progress.

Such borrowing would require consent from the Department of Industry, which would take into account what the money was for. The scheme would also require approval from the Treasury.

The amendment would enable borrowing to take place without further legislation. In the Bill's second reading, Industry Secretary Sir Keith Joseph said he would like to see British Telecom invest about £2 billion during the year 1981-82.

British Telecom has welcomed the principle of the amendment, but a spokesman said detailed discussions would still be necessary after the Bill became enacted.

NEL Courses

Seminar on CAD/CAM systems in Mechanical Engineering, 1-2 April 1981

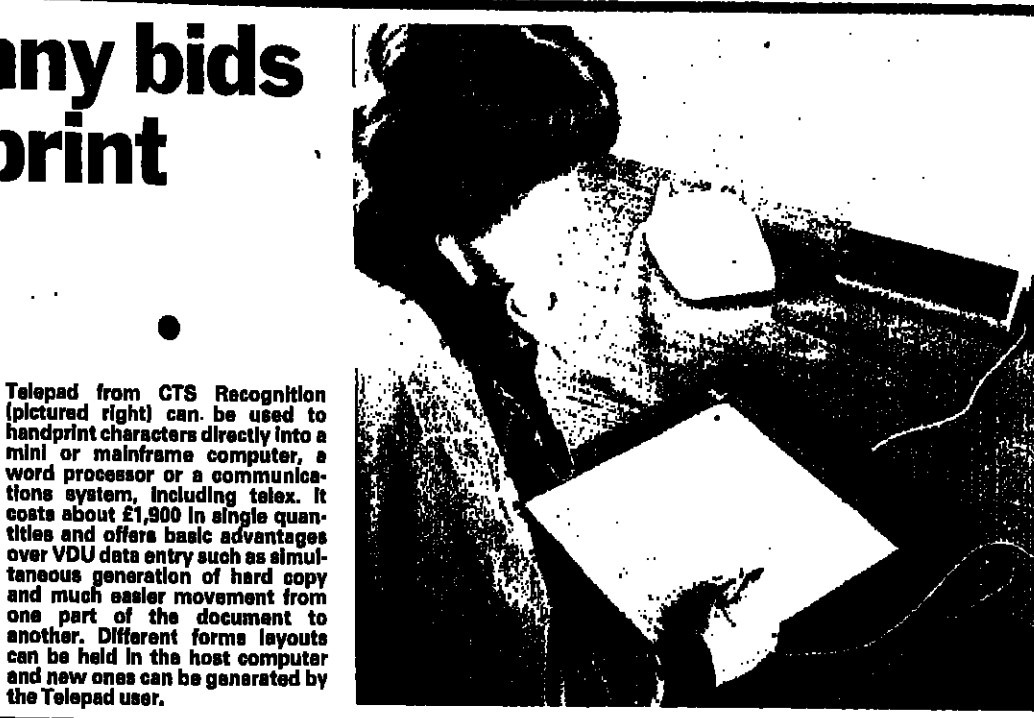
This seminar, for technical staff involved with computers in the design and manufacture of engineering products and components, aims to provide an in-depth appreciation of several computer systems currently available.

The Design of Heat Transfer Plant by Personal Computer Systems, 8 April 1981. This course is intended to show manufacturers and users of heat-exchange equipment how they can take advantage of the latest developments in computer technology.

The Principles and Practice of Flow Measurement, 27 April-1 May 1981. A course for engineers, plant designers, plant operators and anyone concerned with the purchase, use and calibration of flowmeters. Further details on these events can be obtained from

P. Collier, Conference Section,
National Engineering Laboratory,
East Kilbride, GLASGOW G75 0OU
Tel: East Kilbride 20222 ext. 433
Telex: 777888

For more information, please contact:
NEC Telecommunications Europe Co., Ltd., NEC House, 40 Colindale Avenue, London NW9 1QH. Tel: 01-306 8100. Telex: 201614
Thames Systems Ltd, Thames Park Industrial Estate, Thames Valley, GPO 359. Tel: Thames (084 421) 8491



Telepad from GTS Recognition (pictured right) can be used to handprint characters directly into a mini or mainframe computer, a word processor or a communications system, including telex. It costs about £1,900 in single quantities and offers basic advantages over VDU data entry such as simultaneous generation of hard copy and much easier movement from one part of the document to another. Different forms layouts can be held in the host computer and new ones can be generated by the Telepad user.

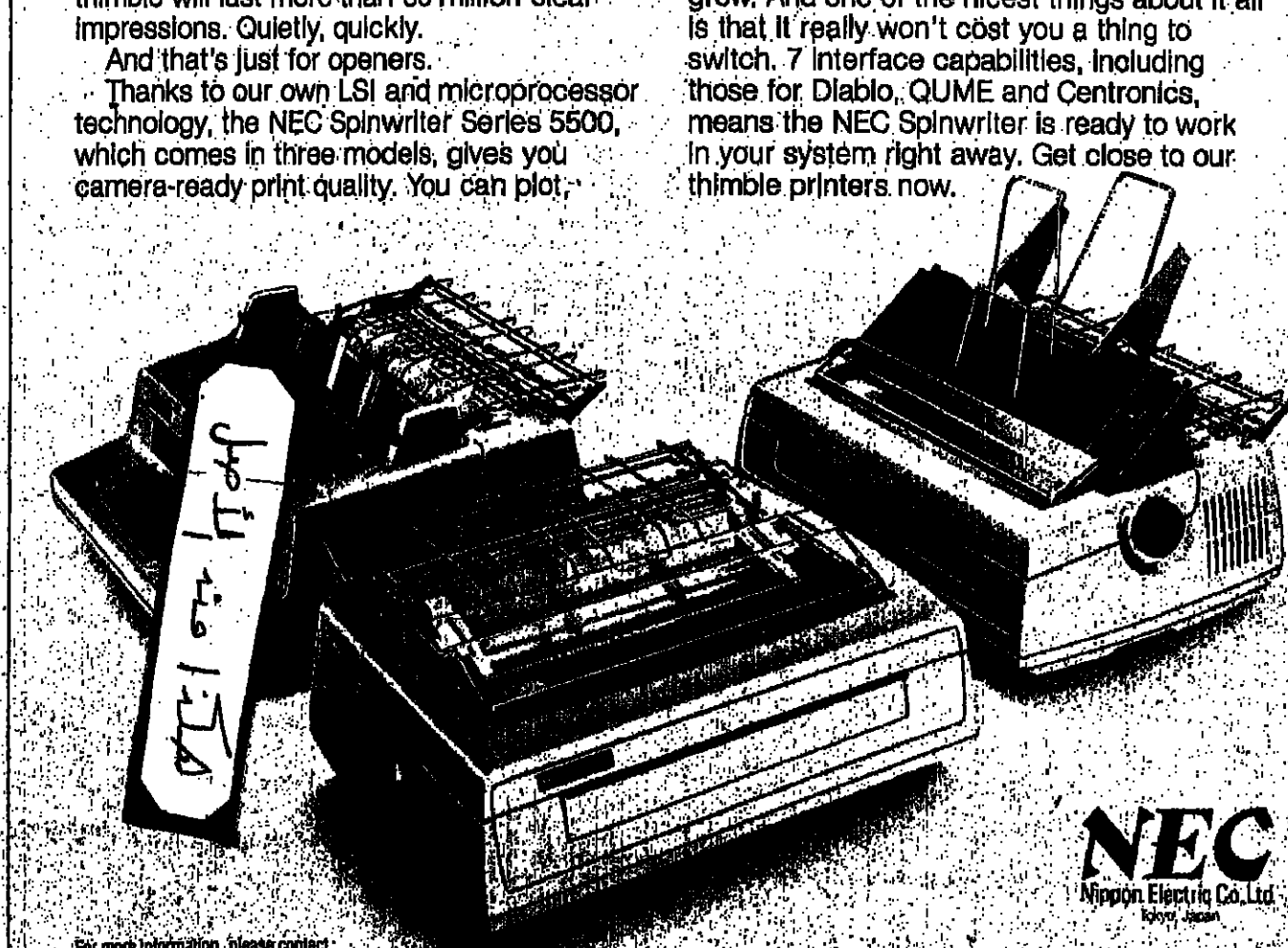
You have every reason in the world to switch to NEC's "thimble" printers. Here are 128 of them.



The secret's in the thimble. It has 128 characters. Instead of the more usual 96. You get 36% more flexibility in handling paperwork than with most of the daisy-wheel and golf-ball print elements of other printers. In English, French, German, Scandinavian, name it. And one thimble will last more than 30 million clear impressions. Quietly, quickly.

And that's just for openers. Thanks to our own LSI and microprocessor technology, the NEC Spinwriter Series 5500, which comes in three models, gives you camera-ready print quality. You can plot, graph, superscript, subscript. Tab horizontally or vertically. And print bidirectionally.

Changing thimbles and ribbons is a snap. Also, system modularity means your Series 5500 printer will grow as your requirements grow. And one of the nicest things about it all is that it really won't cost you a thing to switch. 7 interface capabilities, including those for Diablo, QUME and Centronics, means the NEC Spinwriter is ready to work in your system right away. Get close to our thimble printers now.



For more information, please contact:
NEC Telecommunications Europe Co., Ltd., NEC House, 40 Colindale Avenue, London NW9 1QH. Tel: 01-306 8100. Telex: 201614
Thames Systems Ltd, Thames Park Industrial Estate, Thames Valley, GPO 359. Tel: Thames (084 421) 8491

Texas cuts terminal prices

PRICE cuts averaging 15% have been announced by Texas Instruments for nearly all its data terminals and printers. They include a £200 reduction in the price of the 765 portable bubble memory terminal.

Texas says that the cuts are mainly the result of increasingly automated production techniques but admits that the exchange rate also helped.

Exchange deal

CIT-Alcatel has concluded an agreement with Californian integrated circuits maker Semi Process Inc of Santa Clara under which they will exchange technological know-how. CIT will acquire 25% of SPI capital and the use of SPI technology.

Downtime

by Chad

Good old days of the 1980s

IN the good old days of the late Sixties, when data processing was young and so were we, the average working week in our industry was 80 hours, and the boss wouldn't pay overtime.

I fondly thought that such conditions had long since passed into the realms of myth and alcoholic memories.

Not so, not so at all.

Don Martin, who runs the Sord Importer Exile from the beautiful Cornish resort of Penzance, called on Computer Weekly recently. Leaning against the side of his car as he was leaving the office I noticed the mileage on the odometer. It was 67,000. Don told me that he had clocked up that score in the one year since he had started in the microcomputer business. And worked, as well. About a seven-day week, he said.

Why does he, and why did we,

and why do others go on doing it?

Because the computer industry is still a young and exciting place to be?

Or because all the myths about the laziness of the British worker and the incompetence of British management are as fictional as the infinite improbability drive?

Perhaps the truth lies in a curious direction, with boredom as one of the signposts. You see, boredom begets inertia and inertia, rather than laziness and incompetence, has always struck me as the prevailing problem in our industrial world.

Rushing from Penzance to Nottingham to Liverpool to deliver and install computer systems, or systems implementation, when all your best programs have to be rewritten in the middle of the night, is tough, but hardly boring.

Language barrier!

INFANT technology took on a new meaning at a recent Press conference demonstrating progress in speech synthesis.

The art of producing human speech by electronics alone is not the technology of tomorrow, we were to be shown, but of the here and now.

To demonstrate the culmination of many years' work on the frontiers of science, there was a small doll. We waited anxiously for it to invite one of our party forward to be engaged in conversation, until our hearts thrilled to the request "Please will you play with me?" spoken in a perfect American accent.

Later on in the demonstration, however, we were to discover that there are possibly still a few wrinkles to be ironed out before verbal communication between man and machine can reach its full potential.

The offending article was a coffee percolator which muffled its lines dreadfully. "Good morning, your tea is ready," it said, rather too confidently.

Intelligent machine

WE HAVE this clever IBM PRX in our building. It's so clever it won't let me phone the test match scores, or Dial-a-Disc, or the Speaking Clock. We're not allowed to know what time it is. But what really annoys me is, if it's so clever, why can't it tell that the connection it has supposedly just made for me is giving me nothing but silence? It's like the footman who keeps his uniform spotlessly clean and drops the parcels down the drain.

The other advantage of this system is that when the operator throws the wrong switch at the end of the day, she cuts off all the phones and not just one or two.

Good morning
Your Tea
is Ready



Relying on buzz words

THIS recent and highly-charged debate at Cambridge University about whether structuralism is a valid (or invalid) technique for English teaching may appear as a million light years away from the more prosaic concerns of Computer Weekly readers.

There is a connection, though, however tenuous it may appear at first glance. How frequently have we heard that computer experts have debased the coinage of the English language, from the very luminaries who are now engaged in frenzied debate by the banks of the Cam?

For the non-aficionado, structuralism (pace The Times) is a technique used in linguistic analysis which requires studying a text to see how language and determines how an author writes. Perhaps it is not going too far to say that computer people are also influenced by the materials with which they work. Thus, buzz words become essential instead of the abominable which self-styled preservers of the English language claim them to be.

GILB'S MYTHODOLOGY

Lost opportunities for automation

YOUR first reaction to a recommendation to "simplify by using more automation" might be that, depending on your experiences, that we have enough problems with computer systems without creating more.

To the first group, the converted, I would say that we do not utilise nearly enough our opportunities for simplification by programmed means.

To the second group, those who are fed up with computers, I suggest that the fault is not automation, but rather a sloppy and amateurish application of it.

What kinds of things can we simplify by more automation? The major area of underdevelopment seems to be in data collection. In addition, we are missing opportunities in system and program testing methods, and in building-in help to systems users.

Lack of training

In the area of data collection, most system designers continue in ignorance, through lack of training, of the opportunities for automation. Most of them continue to design systems as if they had the technical constraints of electromechanical punched card systems. A detailed exposition of the technical opportunities available was presented in disc Humanised input book (Withnorton), which detailed the opportunities we have for more powerful error detection logic, for automatic correction of human input error, and for variation tolerance of input.

For example, I recently worked with a large Scandinavian insurance company. One of their problems was in solving the problem of delay between changes in insurance policies by agents and the point where a "formally up-dated record of the changes was available to the online databases. The solution was to look at the way in which the data is entered into the integrated database, and to use a more logical, easily reversible way of entering the data.

The automation opportunity had been identified in the data

collection area. Most of the delays were caused by mail being sent back and forth, queues of work at the central office, and central office quality control procedures — which usually resulted in a need to ask the agent to correct or complete some data.

What might seem obvious to some readers had not even been aired. It was to decentralise the data collection to the agent. At one extreme the agent could take a portable terminal on house calls, in the short term he could have one at his office or home. The procedure of mail transport, validation of data and keypunching could all be automated without bothering the central office staff.

In another case, a European airline had tangled itself in a 250 work-year project plan, unacceptable to management. Most of the effort was for centralising a database, but the major objectives were to reduce data collection staff by about 100 people for ticket fare data collection. They already had an online data entry system, so I suppose they did not think they could push things much further. On the other hand, most of the human effort seemed to go into encoding ticket information manually on forms.

Direct capture

The opportunity we grasped was direct capture online of the ticket information without any look-up of codes, and without any filling out of keypunching forms. This required a lot more programmed logic to take in the raw ticket data and convert it to the standardised system. It required the reporting system. It required a 250 work-year project. It was possible to a series of dry run tests on actual tickets.

The direct capture here was that the major management objectives could be met by a system which was simpler, cheaper, and faster. It required a 250 work-year project. It was possible to a series of dry run tests on actual tickets.

The trick was not only to attack the critical part of the system (where human effort was recently wasted on automatable tasks), but

to apply complicated programming to the input task. The programming is a one-time task of instructing the computer how to handle the ticket codes. However complex it is, it is easily saved when compared with hundreds of people working daily for years at the task which can be automated.

This is the opportunity which I find is all too frequently missed. We are too busy following our old traditions of simplifying input for machines. We don't see that the economics and machine capacity have changed. We don't see the opportunity we have to simplify the mindless encoding work by a little dash of automation.

Understanding

Automatic correction of human error is an additional lost simplification opportunity. Most programmers and designers have no idea that this can be done and most have never done it or seen it done. Incredible! In 1968-69 we designed a publisher system where nearly every data element that could be entered was capable of some degree of automatic correction (say 90%-95% of single character errors) could be corrected without manual intervention. The logic for doing so was usually relatively simple to implement (the most complex algorithm was for automatic correction to names of

customers and author/title combinations — it could be done in 40 to 800 lines of Fortran depending on the sophistication wanted).

How many of you have large staffs and large delays because of validation and correction procedures which could have been simplified by automation? Too many is the answer, I fear.

How many of you still have great problems getting users to understand the system well, and yet you still rely on courses and handbooks to teach them, rather than an extensive built-in help on an as-needed basis? How many of you still rely on conventional program testing methods, and can hardly explain the automated tools such as deep file diagnosis programs, automated standards checkers, test path analysers, dual but distinct program code, automatic program structuring engines and comment assertion checkers? Not many, I know.

Yet these are some of the lost opportunities for automation to simplify the program test process. Automation can simply make that at present.

FOURTEEN YEARS AGO

From Computer Weekly of February 9, 1967

Our Ten Years Ago column becomes Fourteen Years Ago for the period corresponding to the 1971 postal strike, which caused publication to be suspended.

LONDON University Institute of Continuing Education has been informed by the Department of Education and Science that it will receive no more service grants. The Institute has been asked to provide a report on its future plans. The Institute has been asked to provide a report on its future plans.

provide commercial users with comprehensive data on products and services. The Institute has been asked to provide a report on its future plans.

FOCUS

When 8m are jobless



Tom Gilb is an independent consultant, lecturer and author on computing topics.

THIS assistant director of the highly regarded Ashridge Management College, Jeremy Hall, has told the Institute of Marketing that the next 18 years will see unemployment rising to 8,000,000. The rapid development and introduction of the microchip is cast as the prime villain, aided and abetted by automation and low-cost electronically-controlled production systems.

Allowing for a tendency to confuse the microprocessor with a chip, the college does however offer some practical comfort. The new technology will offer the opportunity for creating new industries such as electronic games and home computing. Presumably at least some of the unemployed will be able to keep themselves amused.

Prospects

Hall offers no solution to unemployment except that, in the longer term, prospects look brighter as "youngsters are trained in new industries such as computer software programming". That this could lead to further microchip-created redundancies was not part of the projection.

The Ashridge report is but one of a series of dire warnings on the consequences of microchip technology. Well known for its management consultancy services, Fieldrick and Struggles, which employs some 100 search consultants, has just compiled a top UK management computer industry report which shows that 60% of chief executives of large companies anticipate radical change, and the biggest to this change is the impact of the electronic office, communications and falling microelectronic costs.

Think big

The report also suggests that increased competition and increased working capital requirements could lead to the business failure of many smaller firms and the conse-

quency by merger and acquisition substantially larger units. The big and get the protection of a larger company around you, will seem to be the general theme.

This attitude, however, leaves little room for the small business. Many of the more successful flourishing computing companies are not in the household name or Stock Exchange listings.

Most companies which have a history of recognition as specialists, notably in office-of-the-future technology, are working at the stretch with only the current availability of skilled personnel holding them back. Similarly, the product marketplaces, companies offering cost-effective "turnkey" solutions are being squeezed out by the ready availability of the products.

The same picture emerges for the service support industry. Bureaux offering a specialist operation are almost having to work away unless, possibly, bulk of the service is bought. Again, it is the specialist moment company which is likely not the general-purpose provider.

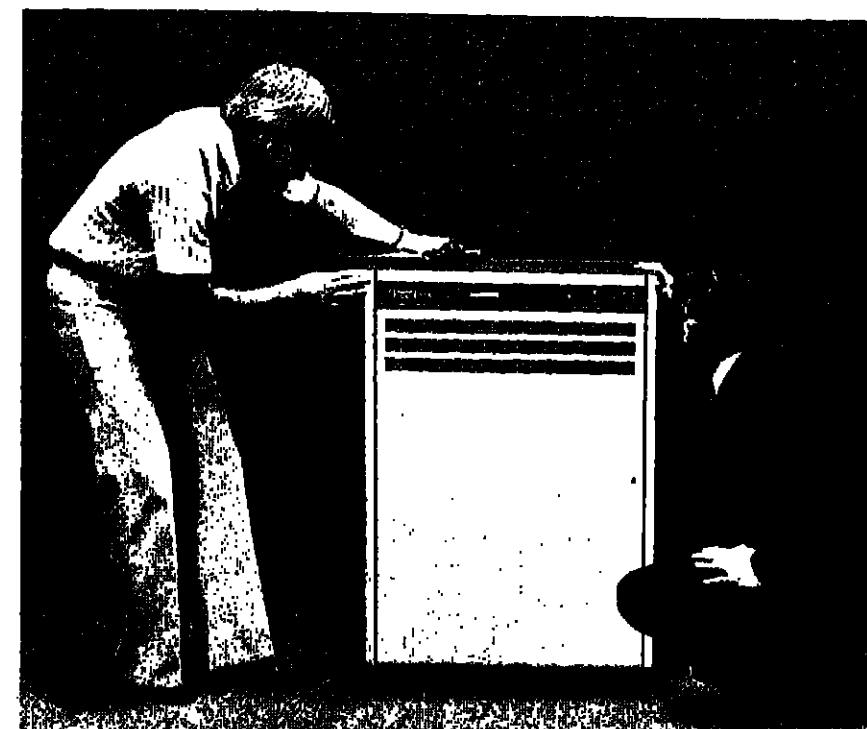
Benefits

On the wider front, many computer industry commentators would dispute the suggestion that the introduction of microchip technology brings about a reduction in company workforces. What it produces is a greater workload, probably a greater level of cost-effective benefits.

Should any interested party want to know more about the VAX family, they should contact Digital Equipment Corporation, which is the only company which is likely not the general-purpose provider.

Introducing a computer too small to be a VAX, but too powerful to be anything else.

Digital's new VAX-11/750.



It will change the way you think about computers.

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Imagine VAX system power available to small departments. For dedicated real-time, interactive and batch environments. Distributed throughout your organisation wherever it can improve productivity. And in a whole host of new OEM and end-user applications that were never practical before.

The VAX-11/750, from Digital Equipment Corporation, is so much computer for so little money it will literally change the way you think about computers.

VAX family compatibility.

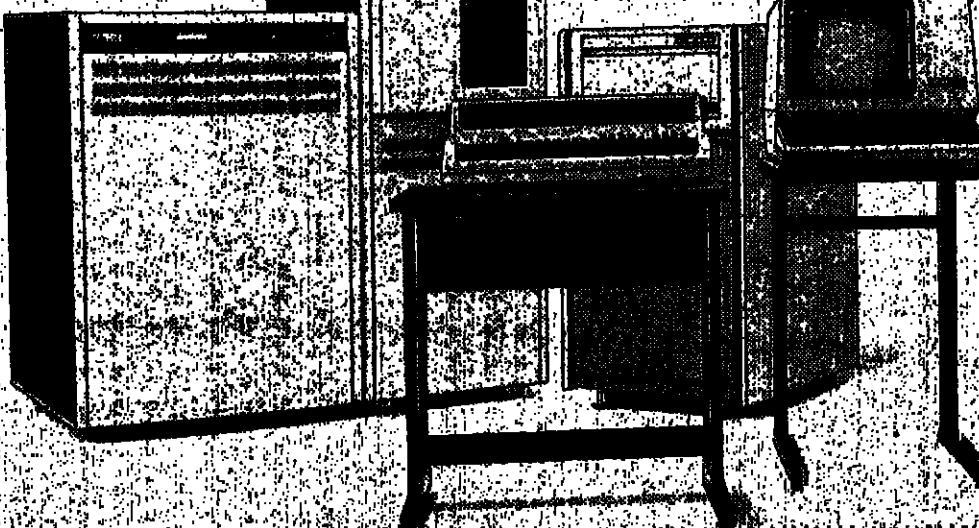
Despite its size and price, the VAX-11/750 is totally software compatible with the larger, faster VAX-11/780 — the computer that has been setting performance standards ever since its introduction.

It has the same kind of real-time response. The same 32-bit addressing. The same powerful instruction set. The same two gigabytes of user program space.

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System, already proven in thousands of VAX-11/780 applications.

You get an optimising FORTRAN that is a full ANSI 77.



implementation. A high-speed COBOL based on current and anticipated ANSI standards. A PL/I in the same performance class as VAX FORTRAN.

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Because the VAX-11/750 offers total family compatibility with the VAX-11/780, you can run all your application programs on either system. Using the same data management facilities that include sequential, random and multikey ISAM. FMS for screen formatting. DATARETIVE for query and report writing.

And to make system performance complete, Digital has introduced its own RM80 Winchester disk, the latest in mass storage technology.

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☐ Please send me literature on the VAX family.

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Sir Keith rejects plan for a CAD Institute

by Eileen Stainer

THE Department of Industry has rejected a recommendation from ACARD, the Cabinet's Advisory Council for Applied Research and Development, for a Computer Aided Engineering Institute.

In its most recent study on computer aided design and computer aided management (CAD/CAM) a year ago, ACARD suggested that the advisory and bureau services provided by the National Engineering Laboratory and the work on software development by the Computer Aided Design Centre should be co-ordinated into a single organisation or institute.

In its response the DoI has agreed that there is a need to increase collaboration between the

NEL and the CAD/C, but not on a complete basis, as the NEL has interests in other research and development work, like automated small batch production.

The DoI has also rejected the recommendation that both the NEL and the CAD/C should be moved to a more central place than East Kilbride and Cambridge respectively.

Location near universities and industries is rated by the DoI as a higher priority than accessibility.

In its report ACARD suggested that the DoI should take responsibility for producing and disseminating information on the subject through courses and seminars. It indicated that the Department should take advice on this from its

successful microelectronics awareness programme.

The DoI has accepted these two points and emphasised that it is already trying other schemes to improve awareness. Money to provide this awareness would come from an increasing proportion of its science and technology budget.

ACARD's plan of maintaining a close watch on overseas developments was also accepted, although the Department already has close links with science counsellors in Bonn, Paris, Washington, Tokyo and Moscow.

ACARD made five recommendations concerned with education at all levels. One was that computing should be given more emphasis in schools; another that



Sir Keith Joseph

undergraduate courses in engineering should include the use of CAD systems.

The other three involved re-training schemes for existing staff and managers, including post-graduates.

In response the DoI has indicated that the whole area of engineering education is being examined by the government because of the findings of the controversial Finiston report. Computer studies and CAD are limited by a shortage of trained teachers, staff and equipment.

Universities and polytechnics, with the help of the Science Research Council, are launching five new courses in computer aided circuit design.

GaAs integrated circuit market expected to 'take off' this year

THE Gallium Arsenide integrated circuit market is expected to take off at the end of this year, according to a study by US market research company Strategic Business Services. And for the first time the US manufacturers will not be leading the field.

Analogous chips such as amplifiers, modulators and multiplexers will appear first, with digital ICs appearing during 1983, says the report. The main markets will be in telecommunications, data processing, military and instrumentation.

US manufacturers have opted mainly for the less fruitful military market, while Europe and Japan have gone more for the large volume commercial markets like satellite television.

Europe and Japan will be

contenders for the leading position. In the UK, GEC expects to produce custom devices using GaAs technology in a few years time. Research and development being carried out at the firm's research centre.

According to the report, the world market should reach \$1 billion by 1990 if no unforeseen technological problems arise before then.

The report, which is cited as "Impact of GaAs on MOS, Si and bipolar technologies", says that the world market for GaAs integrated circuitry will be \$100 billion. It has been estimated that in 1979 there were \$4 billion worth of ICs delivered worldwide.

Second private firm may move into satcom

ANOTHER private company has followed GEC's lead in announcing its ambition to run satellite-based communications services. The company, Air Call, currently provides a radio-paging service.

Walter Stevenson, a director, says that the company's business is message and data handling, and that to offer broadband transmission services - such as facsimile, data and television - would be a natural extension to its existing service.

Such services could use satellite or microwave networks provided by private industry; or they could be based on British Telecom's networks, as value-added services, if the Department of Industry decides to allow this after studying Professor Michael Beesley's report, which was delivered last month.

Private industry has been encouraged to think in terms of providing new communications services, not just because Sir Keith Joseph has been talking about liberalising British Telecom's monopoly since before the present government came to power.

because Industry Minister John Marshall has been visiting companies to seek views on possible new services from the firm. Sir Keith's statement in the House last July.

Stevenson points to Sir Keith's remarks about specialised microwave and point-to-point services and says there would be a point in putting through a British Telecommunications Bill at the end of the day to be granted.

Air Call is not finalising its plans in advance of the passing of a Bill, but one possibility is a consortium of companies providing services via about 50 shared stations in the UK. A limited service could be started before the end of the year (given that the Bill is passed and the DoI approves a plan), based on the existing British Telecom satellite that is used for commercial trials.

The firm describes itself as a high-level programming language with a number of powerful extensions to the ANSI specification that make it suitable for scientific and educational applications.

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Fortronic on verge of exclusive European marketing deal with ICL

by Keith Jones

BANK terminal manufacturer Fortronic of Fife is currently negotiating an agreement with ICL that will extend the latter's marketing rights of Fortronic's kit to a worldwide basis. Last year, the two firms signed a deal covering the UK and Ireland.

Fortronic marketing director Bill Archibald said that the deal might exclude the US, where ICL's presence was limited, but European countries like France, where ICL is a major force, plus Spain, Portugal and Switzerland were seen as very promising.

Archibald added, "We need firm assurances from ICL of business we can get out of the agreement before we sign."

New features

Archibald spent more than three weeks last year visiting banks in Spain, France, Switzerland and Austria, ostensibly to demonstrate an existing Fortronic product, the foreign exchange terminal, but also to determine what facilities they would most favour on the F55, the yet to be announced successor to the existing Fortronic Transaction Terminal System.

TTS is the hardware forming the basis of a variety of Fortronic terminal products. They include the foreign exchange terminal and the cashier terminal installed already and totalling around 2,000 at 300 branches of the Clydesdale Bank in Scotland - Fortronic's first major contract.

The F55 will offer new features like a tilting VDU with 12 or 16 lines of 40 characters each, a full alphanumeric printer and three Motorola 6809 microprocessors compared with just one less powerful 6800 in the TTS.

There will also be four interfaces at the back of the F55 for peripheral keyboards, passbook and document printers and 4K bytes of

CMOS memory with battery back-up to avoid losing balances.

Another role for the TTS is that of a controller for a cash dispenser manufactured by De la Rue. Besides being sold in this guise within the UK to banks like the Midland and Yorkshire Bank, it has already found its way into the branches of several of De la Rue's continental banking customers.

Bill Archibald said that De la Rue assisted him to contact key data processing people in the banks he visited and that "magnificent assistance" was also provided by the British Overseas Trade Board before he started his tour.

Unlike the UK, where the banking market consists of a handful of very large prospective customers, the number of banks on the Continent is far greater and the risks involved in bidding for any one contract are often far less.

Spain alone has 350 banks, and is seen by Archibald as a very promising market, along with Portugal and Switzerland, for the foreign exchange system.

All three could follow the lead of customers in the British Isles who have opted for the product, like Barclays with 450 terminals, the Bank of Ireland with 100 and National Westminster which has just 25 at the moment.

Potential

Archibald spent much time on his tour simply standing in bank branches observing procedures for dealing with customers. Cities visited were Madrid, Barcelona, Geneva, Zurich, Salzburg, Bern and Paris, and Belgium and Holland were covered later by a colleague.

West Germany was missed out because, according to Archibald, decisions have already been made there about replacements for existing terminal equipment.

But he expects between 2,000 and 2,500 Fortronic terminals a

year to be installed on the Continent over the next few years, most of them probably by ICL and with ICL providing customer support.

Archibald quoted the study published last year by consultants Pactel, which forecast a potential market of 300,000 units for the kind of equipment built by Fortronic.

He also predicted that Fortronic would manufacture about a third of the 40,000 terminals that Pactel expects UK banks to order over the next 10 years.

Fortronic's main competitors will be companies that are many times bigger like IBM, Burroughs, NCR, Philips and Nixdorf. With turnover of around £3½ million over the last year, Fortronic is a minnow in comparison.

The majority of its equity is now held by a group of London investment trusts which have provided the company with the credibility

and stability needed to do business with the banking industry.

Purpose-built

They also provided about £2 million worth of funding for developing equipment like the F55 and have helped Fortronic to go ahead with plans to move out of its two small factories and into a purpose-built site. Backing has also come from the Scottish Development Authority.

Fortronic's UK policy is to leave marketing of its kit largely to ICL but to provide customers with first-line support to avoid losing touch with them.

The Fortronic kit at the Clydesdale Bank has eliminated the requirement for paying-in slips and also for a cheque when a customer is drawing on his own account at any Clydesdale branch.



Fortronic marketing manager Bill Archibald with the Transaction Terminal System. He demonstrated it to prospective banking customers in France, Spain, Switzerland and Austria late last year in its foreign exchange role. He also assessed what facilities Continental customers might require on the F55, the successor to the TTS which has yet to be formally launched. About 1,000 F55s are to be installed by Barclays Bank as counter terminals.

Japan's fivefold attack on East German market

JAPAN has booked five times the space it took at last year's Leipzig Fair in East Germany, from March 15 to 21, and is expected to show computer products for the first time.

East German products on show are expected to include 2Mbps and 8Mbps digital telephone transmission systems and multiplexers from Nachrichtenelektronik; a microprocessor-controlled electronic local telephone exchange for 256 to 1,024 subscribers from the same company; and a

range of computer products from Robotron, East Germany's biggest manufacturing organisation.

These range from software for bank cheque transactions, railway seat reservations, hotel bookings and management information to run on Robotron's IBM 370-compatible EC 1055M, through distributed processing minis for process control, data collection and test processing, to daisy-wheel printers and the microprocessor-controlled memory-typewriter which is based on the daisy-wheel mechanism.

This is about to be launched in the UK at £1,400.

Spokesmen for the Fair criticised UK businessmen for being reluctant to get off their stands and research the East German market. They had also shown little interest in taking part in the conference, for which 130 lectures were scheduled.

However, East Germany's main aim was to increase exports to the UK, since they had declined by 20% between 1979 and 1980, while

UK exports to East Germany had doubled - mainly because of a single big contract with Guest Keen and Nettlefold.

Space module

FERRANTI'S P100-L 16-bit bipolar microprocessor has been selected by British Aerospace for use in a spacecraft microcomputer module under development at Stevenage. It is the only completely European 16-bit processor.

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Barclays pilot order for 1,000 terminals

BARCLAYS will be one of the first users of Fortronic's new F55 banking terminal having placed a "pilot order" for 1,000 units to be used at branch counters. The F55s will be supplied by ICL which markets Fortronic kit in the UK.

Barclays will no doubt be comparing the F55 with the 1,000 counter terminals being supplied by its competitor, Philips, for the same functions and will decide whether the additional £500 units needed should be similarly split between the two manufacturers.

Barclays is leading the other UK clearing banks in the adoption of counter terminals. Likely applications will include online account inquiries, cash dispensing without cheques and the related authorisation of Barclay cards. Paying-in slips could also be eliminated where the account being credited was at the same head.

According to Barclays the counter terminals from Fortronic and Philips will complement rather than take over the work handled by the Burroughs 280



back office computers installed at most Barclays branches.

While ICL is handling the selling side of the contract with Barclays, Fortronic itself will provide first line maintenance services and is setting up engineering centres in Manchester and London for that purpose. The company's headquarters is at Dunfermline, Fife.

Barclays is now evaluating terminal controllers for its 2,500 branches. This business might not necessarily go to Philips or the Fortronic/ICL combine. Burroughs and NCR are among the possible alternative suppliers.

You get a lot from a SOVEREIGN



Clydesdale Bank's Stock Exchange Services Department prints its share certificates on a SOVEREIGN - CMC's multi-function multi-processor system.

If you're interested how SOVEREIGN can cope with this and the following all at the same time:

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Big enough to trust - small enough to care

by Eileen Stainer

The extra memory frees all four external ports which were occupied in the original by memory expansion modules. They can now be used for plug-in peripherals.



The HP-83 is identical to the 85, which was introduced last year, except that it does not have the integrated tape drive or thermal

When used for the production of semi-custom chips, the combina-

MEDL's main semi-custom devices use the CELLMOS approach. With the help of computer-aided design equipment, a

PHYSICAL UK's distributor, FACT Microsoft, now has available a data management system package which is supplied on floppy disc for the Apple II microcomputer for around £75. DBIS stores information otherwise kept in a ledger or file, updates and retrieves information, and generally does all electronic filing chores.

MEDL has also committed itself to the ULA method but on a much smaller basis. ISO-ULAMOS products are expected to appear this year with 1,024 gates and 512 cells.

TORY . . . "A change in the relationship between the software industry and its customers."

RAPS enables users to access disc-held Power/VS (E) print file queues from a 3270 terminal under

At the same time two other CPP products, Improve/RT and Improve/DS, are being renamed CA-Detect and CA-Dynam/DMF respectively. CA-Detect enables DOS users to locate a bottleneck in the system, for example if it is I/O or CPU bound. CA-Dynam/DMF is an OS disc file management system which complements one of

The company has started its product line with two high-speed packages: VSAM Assist for back-

The second product is a terminal sharing system (VTF) for OS/VS and online CICS users. It relieves users of the need to have a

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Greg Hayes and his TRS 80 microcomputer. But what's a systems programmer and a small machine doing on a page for operators? See story below.

Emulating experience

A PROBLEM about training operators, or for any job which is essentially practical, is that people can't be expected to learn the tricks of the trade without actually doing them. It is expensive and difficult to initiate trainee operators, or trainee airline pilots come to that, by carting DC 10s and IBM 360s into the classroom. The alternative — on-the-job training so called — is also expensive and potentially disastrous.

One solution is the provision of some kind of emulator. Greg Hayes, pictured above with his TRS 80 microcomputer, was commissioned by Malcolm Fry to prepare an operators' emulator. Fry wants the emulator for the newly-formed Protocol Operations education outfit and it will be demonstrated at the first event to-day, February 12, at the Coburg Hotel in London.

"It's overrating the case," says Hayes, "to call it an emulator. What happens is that if the student

responds correctly to a prompt, the TRS80 emulates a Power VS console."

The micro is designed to reinforce the lessons that beginners have learnt in the classroom. It offers the benefits of having them use a keyboard miles away from any mainframe. What the student sees is a split-screen, in the top two-thirds acting as a Power console with the remainder given over to student information.

Three attempts

The present course demands that 24 Power VS prompts are learned so that the commands can be keyed in by the student. A handout asks: "DISPLAY THE PAYROLL PRINT ON THE QUEUE" to which the student should respond by keying in "D LST, *". The student is allowed three attempts and the correct response is shown on the screen after the third wrong attempt.

Having completed the 24 questions, the student is given a piece of printout which details the following: Course name, date, student name, question number, attempts made, whether the student made a correct response, and the answer. The answers can be lined up against the questions for future reference.

Hayes prepared most of the teaching program in Basic and went into Assembler for scrolling the upper part of the screen. He built it around four files for the questions, the correct answers, the student file and the emulated responses.

Hayes is well suited to bring the micro to the mainframe. He spends his days at an IBM 3278 terminal working as a self-employed systems programmer, and for relaxation he works on his TRS80. After his BSc in electronics at Kingston Poly he spent a year as an operator.

Now everyone wants to be called 'manager'

JOB titles seem to be proliferating faster than fall-out shelters these days.

The 1975 Computer Users' Year Book listed four operations categories: Manager; chief operator; junior operator. Five years on and the list has inflated to include three more categories: Senior operator; telecommunications operator; job scheduler. (Incidentally in 1974 the median salary range for ops was £1,500 to £1,750.

Categories

According to the Auerbach survey, American ops can fall into one of six categories. "The levels," it says, "have been identified statistically by performing a frequency distribution on the actual salaries paid all people within a particular group and determining how many modes (bell shaped curves) occur in the distribution. This establishes how many levels of skill/responsibility the marketplace recognises, as evidenced by actual practice."

Levels A and B in Table 1 are operator grades which are minutely distinguished in the pecking order. An A is "usually competent to work independently in most phases and requires only some general direction." B is "usually fairly competent to work on several phases of the activities with only general directions."

As can be seen, the new ops managers sometimes hang their hats on a restructuring of the hierarchy as a way of imposing their own version of a career structure. At one also I visited recently, the incoming manager had created an eight-level hierarchy from junior op ("It sounds nicer than trainee," he said) to his own managerial post. "Such a structure," he explained, "lets people know they are progressing and it lets them know that you know."

At another site I have been to, the ops manager was not even allowed to dignify himself with a managerial title let alone make

assistant managers out of his minions. Company policy dictated that he be called superintendent of computer operations.

But operations is not the only part of DP to have created more roles for itself. To return to the older, thinner, copy of CUYB is to go to the days when 17 job titles could cope with any mainframe. By 1980, 23 categories were necessary.

More job titles mean an increasing sense of importance which is also reflected in the ways American mainframe big-wigs have christened themselves through the years.

The machine accounting manager was top of the pile in the early 1950s but had evolved into a manager of computer operations by 1960. A decade passed and the life form was starting the ascent to boardroom heights with the title of manager of data processing. There was no way that a mere machine accounting manager could hustle a seat up on the board, but current US computer headmen belong there as vice-presidents. Junior, senior, junior-senior and senior-junior vice-presidents are strange, tightly-suited creatures given to laughing at jokes which aren't funny at all. They are, however, in no imminent danger of extinction.

Managers are now necessary

where technicians used to rule. Computers are more important in the latest CUYB the manager services manager is introduced. "He would be likely," clearly, "to be regarded as clearly so if his title is a management services director or higher status and a more significant role."

Ops managers range from machine minders to the manager of a golfing partner. In his installations the job titles suggest all chiefs and no Indians. But why not? Nearly everyone wants to be dubbed a manager.

Newspapers are just as full of esteemed competitors of CUYB staff of 15 people responsible for preparing copy. Nine of them in the term "editor" somewhere in their job titles.

Etiquette

These things are important though. "What do you do?" is a question often asked. The large time might like to ask all sorts of things about religion, politics, salary etc.

Etiquette forces the inquirer to wait, but no social graces stopped the question, "What is your?"

It's pleasant to have an appropriate answer.

US JOB TITLE	AVERAGE ANNUAL SALARY	STERLING EQUIVALENT (\$2.35/£)	UK JOB TITLE	MEDIAN ANNUAL SALARY
Supervisor/manager	\$23,900	£10,170	Operations manager	£746
Lead	\$17,800	£7575	Chief operator	£387
Senior	\$15,300	£6510	Shift leader	£351
A	\$13,200	£5,617	operator	£311
B	\$12,000	£5,108		
Trainee	\$10,400	£4,425		

TABLE 1: A comparison of 1980 US and UK operations staff salaries. American figures courtesy of Auerbach Publishers, UK numbers based on Computer Users' Year Book.

How UK and US ops' salaries compare

SURVEYS, statistics and other generalisations are always useful in an argument. It's reassuring to know what Joe Average and Sue Median are being paid, even if you are certain they don't exist.

Such was the interest in the pay figures published in Op Spot a few weeks ago, that I have dug up a few more. The table below is from Auerbach's Salary Trends in DP Operations and from the 1980 Computer Users' Year Book.

A couple of points should be made: Firstly, the UK salary figures include regular overtime and shift premiums where appropriate. Secondly, the US salary figures are averages and salary averages tend to be distorted by the occasional exceptionally high salary. Assuming that the sources

are good, median figures are more useful. Other than that, the figures they say, speak for themselves and there seems to be one figure for median UK operations to be envious of their average US counterparts.

Manufacturers pay more

DID you know that in America manufacturing firms pay their ops more than service firms? Capital intensive firms pay more than labour intensive firms and the US banks tend to pay their fringe benefits more than their counterparts.

Invitational Computer Conferences

A SERIES of one-day regional computer shows organised by S. J. Johnson Associates make their debut in Europe this year. Called Invitational Computer Conferences (ICCs), they are designed to be the requirements of the quantity

There will be a programme of technical product demonstrations, direct display and demonstration by 30 top manufacturers. ICC will be in London on March 17. For full details contact Tina Lewis on 044 21 17.

PROGRAMMERS' PAGE

The next decade will witness a computerised revolution within the home — a fact discovered by PAMELA ROWE during her visit to the Microelectronics Come Home Exhibition at the Design Centre in London. The silicon chip stands poised to undertake or render painless domestic tasks.

"CHIPS with Everything" entered common parlance in the sixties with Arnold Weaker's play. In the Seventies it took on a double meaning with the advent of the silicon sort.

We have been promised great changes in the next ten years — which most of us anticipate with a frisson of enjoyment — through its invasion of every facet of life.

The familiar forecast is increased leisure for everyone and new styles of working life.

Silicon chips have already made inroads into some areas — cars built by robots, computerised accounting and automated stock-taking; but its impact on the home has yet to be realised in full.

An exhibition winking out the chips scattered around the average semi is now being held at the Design Centre, London, until March 7 and then at the Glasgow Design Centre from March 30 to May 30.

"Microelectronics Come Home" concentrates on the way British designers and manufacturers are introducing new technology into everyday products.

Each room in the family home is investigated and with the constant tinkling of the variable door chimes as background muzak — they can be programmed for an endless permutation of notes — one follows the compact layout of the best-designed homes.

Gaining access to the micro-electronic house isn't all that easy when it is protected by an automa-

Chips with everything on the domestic scene

ted burglar alarm. The Yale Diplomat system consists of a control unit, three magnetic switches for doors and windows, and a pressure pad.

It can be self-installed and allows 25 seconds after setting to leave the house, or the same time to reset if you've accidentally tripped the alarm, before a high-frequency warbling siren is let loose.

Tucked in a hall cupboard you could find "Mole", a vacuum cleaner robot designed by J. McCormick at the North Staffs Poly.

This non-burrowing Mole contains a micro and memory chip; once this invaluable ally has "done" a room, it never forgets and can reproduce the whole sequence of movements.

With sensors to detect alien objects, it steers round the furniture and there's no need even to move the cat sitting on the mat.

It is perhaps in the living room that the chip has had most effect. Besides the obligatory digital watch and calculator per person, Intelligent Chess lies on a table awaiting its next challenger, who or which may be beginner, expert, or schizophrenically itself.

Moves are shown either on the digital display, or if linked to a TV, on the screen. IC makes one million operations per second checking the legality of your moves and pointing out the strengths and weaknesses of your

game. Your resultant curses can be recorded for posterity or later penitence, and pre-recorded cassettes played on the television for non-stop chess — if the family will let you.

When this falls, the Home Entertainment Centre offers 14 TV games including Combat, Maze, Horse Racing, Motor Racing and Master Mind, the latter going supersonic to become a game on its own.

Instead of manual four-coloured pegs, a sequence of six numbers gives a possible million permutations and is stored on a chip.

One person or many may play and you can race time to beat the clock. Again you are judged audibly, with a buzzer for failure and a beep when you win. No hope of hiding the buzz of failure.

The Study is more serious. The British Telecom videodata system Prestel dominates the desk, a ZX80 may hold the household accounts and an X-Press Callmaker telephone functions either as phone or aide.

It stands ready to store up to 10

For the more conventionally minded, a good six feet of living room could be given up to the Hornby Model Railway System incorporating the Zero 1 Power Centre.

This awesome-sounding facility vests control in each loco rather than the conventional track, so that up to 15 trains can be independently controlled by the memory unit. It contains an inertia control mechanism to simulate the realistically savage stop and start of travel.

The Study is more serious. The British Telecom videodata system Prestel dominates the desk, a ZX80 may hold the household accounts and an X-Press Callmaker telephone functions either as phone or aide.

It stands ready to store up to 10

numbers in its memory, any of which may be dialled by pressing just two buttons.

If there's a gambling man in the house, Genie may rub shoulders with a lamp or two in the corner enabling him to work out his losses. It is a single chip micro for calculating the winnings from complex racing bets.

Previously, this was the sole province of highly-trained professional "settlers", but even inexperienced staff or punters can use Genie to summon up the magic numbers.

From the sublime to the rigorous, the workaday world of the kitchen is not forgotten: it comes complete with the usual offices of a built-in Couture de Luxe Wall Oven with computerised timer and Creda 1000 RS Electronic washing machine with nine programs and

no electromechanical parts to break down.

The Sensomatic tumble dryer capitalises rather cleverly on the fact that exhaust air temperature remains steady while the washing is wet but shoots up as soon as it begins to dry.

The general temperature is maintained by a self-learning Central Heating Controller, which teaches itself to save your fuel bill. Hot water and room temperature are controlled separately.

The chip has become more ornamental in the bedroom with flashing electronic jewellery winking out messages or colours.

A pocket TV sits on the bedside table and is just the right normal reading distance away for its 2in screen to give a bright sharp picture.

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Get your ears on, Good Buddies...

Cos CB World is your kind of mag. It's for breakers by breakers and it's already one issue old. Now we're into our February/March number and we've packed it with the sort of stuff you need to know. Like: Should Smokey have CB? Handles for towns, Cber's Handles, and CB slang for Brit breakers. There's a full test report on a popular Midland rig and photos and specifications of other rigs in the Midland range. Plus readers' letters, details of CB clubs all over the UK, a full colour spread of British-owned trucks and our special CB cap and T-shirt offer. Burn some rubber to the paper shop and eyeball a copy now. Tomorrow may be too late.



...COMING ON WALL TO WALL

February/March number selling now 60p

Omnidata names management team

THE UK company formed to market the Omnidata range of combined data and word processing systems, Omnidata Ltd, has made four management appointments.

Managing director is Christopher Geer, an Oxford University graduate who spent the first ten years of his DP career with IBM. He also spent several years gaining sales management experience with Case, Eitel and Sperry Univac and most recently served as director of European operations at Microdata International.

David Warren joins the company as sales director. His recent experience in the industry has included a spell as sales manager with Data Recall,

national sales manager of what is now called CPT (UK), and a brief period working as sales director of the now defunct Supertyping Company.

Technical manager Ronald Hale left the Royal Navy and joined ICL in 1960 as field engineer. After four years with Data 100 as senior engineer.

Roger Woollett has been named software manager. A graduate of London University, he worked at GEC Hirst Research Centre for seven years researching microwave tubes. He worked as head of the London University Computer Centre's advisory service and gained his commercial experience with Nikdorf and Data 100.

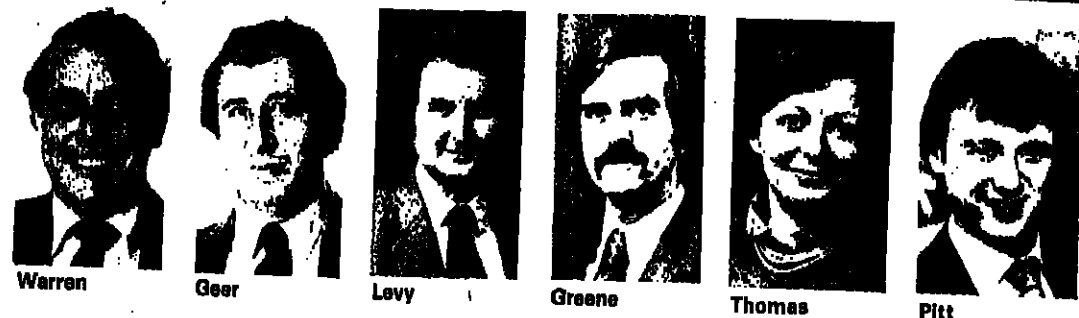
Robert Hunt has been appointed director of semiconductor memories at ITT Semiconductors. He will continue in his present role as plant manager at the company's Fosters Cray division.

Nell Dempsey has been promoted from vice-president of sales to vice-president of marketing at Harris Corp's data communications division.

Richard Pitt has been appointed senior analyst at Zygol. He was formerly an analyst/programmer on Honeywell Level 6 machines.

Clive Taylor is project manager for the company, and controller of budgets and business planning is Adrian Pierce. He was previously senior project planner in the East Sussex County Engineer's Department of Grand Metropolitan.

Mike Bradford has left Immos to join Dicoil Data Systems, as technical support specialist with responsibility for UCSD-Pascal.



Grand Met appointments

SEVERAL management and sales appointments have been made at systems and software house Grand Metropolitan Systems Ltd (GMSL).

Harold Gilmore has been appointed development director, responsible for systems development. Alan Glover, previously marketing and development director, has been appointed marketing director.

Jackie Shearer joins as sales support manager, and will be working with two newly appointed sales support consultants Garry Parsons and Peter Bentley.

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Managing director at STL

A MANAGING director has been appointed at Standard Telecommunications Laboratories (STL), the British research centre of ITT. He is Dr John Shields, who has been with the company for ten years.

Dr Shields holds a PhD in nuclear physics from Glasgow University and is a member of the Institute of Electrical Engineers, and the Institute of Physics. Until his recent promotion, he was general technical director of ITT Europe based in Brussels. He has also been acting managing director of STL.

Richard Clark has joined Marcus Bohn Associates as a senior consultant.

David Longley has joined Harris Systems as marketing manager for the company's DDP display terminals and minis. He was formerly marketing support manager with Data 100.

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South Bank Poly computing principal dies

PRINCIPAL lecturer in computing at South Bank Polytechnic, London, Gareth Pugh has died at the age of 41. After national service as an officer in the RAF, Pugh joined the staff at the Polytechnic in 1969. During his service there, his academic interests moved through computing analysis to computing, progressing to principal lecturer in 1969, when a month's spell as acting head of department.

He contributed to the development of courses in computing throughout his career, planning the BMD and UK computer studies, the graduate diploma in computer science and the British Computer Society course.

Pugh served as an elected member of the Academic Board for several years. He also chaired several ILA (London Education Authority) computer management committees.

Guy Phillips has joined the Telecommunications Computer Centre as an executive. He gained experience in minicomputer and bureau switching at Burroughs and GSI.

Frank Chambers has been appointed managing director of Syst Training. He was formerly with the tech and has spent ten years in the industry.

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THE independent UK minicomputer manufacturers, ABS Computers, Computer Technology and Digico, progressed at snail's pace through the Seventies. But new blood at the top of each company has brought great hopes for the future. Computer Weekly talks to the new men and finds out why the companies could be ready to make an impact.

New blood gives triple boost to UK minimakers

by John Kavanagh

AT the start of the Seventies three small UK minicomputer manufacturers - Computer Technology, Digico and Allied Business Systems - were just getting off the ground.

By the end of the Seventies the three were still small - and still just getting off the ground. Their combined turnover was barely over £10 million.

But the companies have suddenly not only taken off, but are heading, if not for the stars, then at least beyond the clouds.

The three are different in their markets and levels of financial backing. What they have in common is that new blood has come in at the top, bringing entrepreneurial spirit and a vision of the future to CTL, a new structure to Digico and a clean sweep to Allied Business Systems, now ABS Computers.

Tony Davies is the new man at CTL. He has an engineering background but enjoys the marketing and financial aspects of running a company. Experience in these matters was gained at Membrain, the automatic test equipment manufacturer he formed to make his own system. He sold the company to Schlumberger in the late Seventies.

Davies is now head of Information Technology, formed as a

holding group for CTL and for planned new ventures. The first is Office Technology, which is developing products for the automated office market.

A holding group has also been formed at Digico. It is headed by Ken Atkinson, who arrived as marketing director in 1976 from Wang. He is now managing director of Spanverne Investments, the holding company for Digico and its new associate companies in maintenance, rentals, supplies and

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JOHN ELIDEN, ABS Computers: "I'm the first managing director who understands the products and the technical side."

TONY DAVIES, Computer Technology: "What we've got to do now is get off our backside and sell the products."

KEN ATKINSON, Digico: "A young OEM can come to us and get a sensible deal."

small business systems was opening up. That was when Atkinson was brought in.

At ABS things happened in reverse order. The company was started by an entrepreneur who

Public procurement policies may hamstring the UK industry

by Nicholas Enticknap

THE UK computer industry has always been hampered by the lack of an appropriate government policy. The news that a Ministry of Information Technology was to be set up was therefore particularly welcome. That happened last November; the ministerial reshuffle in January improved the position still further.

Firstly, the new Minister, Kenneth Baker, has had a long association with the industry and is familiar with its problems. Secondly, portfolios were reorganised, so that for the first time one man had responsibility for the distinct but even more closely related areas of telecommunications, microelectronics, robotics and public procurement.

In the same month, the reconstituted Electronics Economic Development Committee (EDC) held its first meeting. The chairman, Sir Henry Chilver, has made it clear that the existence of this committee symbolises a change of emphasis from the detailed investigations of the sector working parties, to a more fundamental search for an effective strategy for the industry.

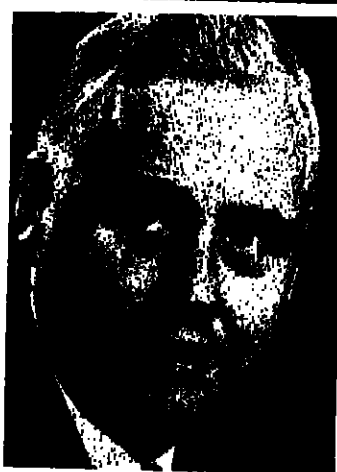
The influence that the committee will have can be gauged from the list of members, which includes Chris Wilson (ICL), Sir William Barlow (Thorn-EMI), Sir Kenneth Corfield (STC), James Merriman (NCC) and Des Plessey (Plessey).

These developments must have implanted fresh hope in the breasts of all those who believe that a strong UK computer industry is

The setting up of the Ministry of Information Technology, and the first meeting of the new-looking Electronics Economic Development Committee, brought fresh hope for the future of the UK computer industry. But the preferential procurement policy which the EDC may operate could prove a hindrance to development. This article looks at why the industry has suffered in the past and examines the problems presented by a policy which is now illegal under EEC law.



Kenneth Baker



Sir William Barlow

fatal to the future strategic and economic health of this country. Which made it all the more disappointing to see it reported that there would be "no large financial handouts, though considerable help could be given through a public purchasing policy" (CW, January 29).

This statement makes the heart sink into the boots for two reasons. Firstly, it suggests that the solu-

tion has been decided upon before the problem has been properly analysed.

At a superficial level the problem is obvious. The UK is importing an increasing proportion of its electronic equipment and components, with an increasingly disadvantageous effect on our balance of payments and strategic independence. But detailed analysis is needed to establish the estimated

demand of the market and then the degree to which our indigenous industry is capable of meeting it, before the nature of the remedies can be specified.

Secondly, the statement quoted is a fairly accurate summary of the solution adopted over the past 10 years. And if there is one thing that everybody is agreed upon, it is that government action over that period has been totally inadequate.

Single tender

Let's forget the question of handouts for the moment. Quite why an industry with so much potential should be denied handouts, when a lame duck like British Leyland was given £990 million, and, earlier, a technological white elephant like Concorde consumed public money to the tune of 10 digits of pounds sterling, is difficult to understand. But the main question I wish to raise is about the desirability of a preferential procurement policy.

We had one of those right up to December 31 last year. It was known as the single tender policy, and it provided that for computer systems over a certain size, government bodies had to purchase from a British supplier. In practice, that meant purchasing from ICL.

This policy was unsatisfactory for a number of reasons. In the first place, it gave ICL very little help, and the rest of the industry none at all. For the past three years or so it accounted for about five per cent of ICL's turnover. In the last year, that meant about £35 million. A sizeable amount of that business would have gone to ICL anyway; much of it was repeat business, and the industry standard for retaining existing customers is 80 per cent and in any case, ICL usually gets about a third of all UK mainframe sales.

So, being generous to the government, it can be said that single tender accounted for £20 million of ICL's business last year. That's not £20 million profit; to get that money ICL had to supply and deliver goods. The real value to ICL is therefore minimal.

On the cheap

The policy had several unpleasant side effects. It encouraged complacency within ICL, with the best will in the world, you are not going to put so much effort into a contract you know is secure, as you would put into one you are competing for. It also aroused resentment among users; nobody likes being told what to do.

Added to this it gave a hammer to ICL's competitors; they get as much mileage out of attacking single tender as they would had the company been heavily subsidised. (I'm amazed at how many computer professionals I meet who think that ICL is subsidised).

Finally, it encouraged government to think it was doing something when in fact it was doing nothing; it's a policy on the cheap.

All of which makes the fact that the single tender policy became illegal under EEC law as from January 1 a good thing.

One people may well be wondering why the EEC has suggested that Britain should open its market to competition from the rest of Europe. The answer is simple. The EEC is a group of 10 or so trading nations which have agreed to follow certain trading practices with a view to removing the obstacles which raise the obvious question: What is GATT?



ICL chairman Chappell... "We regret the lack of progress made during the past year towards adopting a European public sector procurement and support strategy."

ing experience. The rigidity of the policy makes an ordinary legal document look like a masterpiece of lucidity. The whole of the first page and some of the second of the three-page document is taken up with clauses beginning "whereas". Every other sentence refers you to some other document; indeed, the Directive itself is an amendment to a previous Directive.

After some time spent in hard study, I found that the purpose of the Directive "is to establish an international framework of balanced rights and obligations with respect to government procurement, with a view to achieving liberalisation and expansion of world trade." One could be forgiven for thinking that this runs totally contrary to the objective of the EEC as a whole, which is to further the interests of the Community members (isn't it?).

The explanation for this



James Merriman

apparent anomaly can be found in one of the documents to which the Directive refers, which states that "the aim of the Commission's proposal is to avoid inconsistencies between the Community and GATT". The objective cited in the previous paragraph is thus revealed as a GATT objective, which raises the obvious question: What is GATT?

GATT is a group of 30 or so trading nations which have agreed to follow certain trading practices with a view to removing the obstacles which raise the obvious question: What is GATT?

The consequences are not so logical. Take the US, for instance: the US is a signatory to GATT, and is therefore bound to follow the same open public contract tendering procedures as the EEC countries.

But what if it doesn't? What if it does as everybody knows it does? Is there an American policy? There is absolutely nothing any country can do about it. In the EEC, however, the legislation has the force of law and that has made a difference. The

new legislation, therefore, merely put non-EEC countries in a position of equality as far as public tenders are concerned, and then a positive advantage.

All of which makes Philip Chappell's comment in ICL's report, that "we regret the lack of progress made during the past year towards adopting a European public sector procurement and support strategy," look like the makings of understatement. It's not a lack of progress as a whole, but a lack of progress in the opposite direction.

Turning to my second question, how can anybody think it is a procurement policy in the light of this Directive? The policy applies only to contracts with a value in excess of 200,000 European units of account (£130,000 exclusive of VAT); preferential tendering is perfectly permissible below that level.

The wording of the Directive such that it gives scope to all of circumstances. This is not my opinion; an official EEC explanatory statement says: "It should be noted that the Directive governing the right of these companies to participate in the tendering process for public contracts, is rather complex and may give rise to legal disputes."

EEC Directives are by their nature always followed by EEC countries themselves. For example, the Directive which this last Directive is amending states that all public tender contracts of 200,000 ECU should be published in the Official Journal of the Community. This has given rise to a series of questions to the European Parliament by British MEPs asking, in effect, why this requirement is only being met by the UK.

Action needed

The Directive itself makes an oblique reference to this problem by noting that "the provision of this Directive will have to be examined in the light of the way in which the Member States apply this Directive and the GATT Agreement."

However you interpret it, it is clear that the Directive is doubtful, as well as limited in scope and efficiency, and it is a healthy corrective to the wider and headier excesses of our electronic enthusiasts.

The apparent anti-climax is a simple point, made in the opening articles "no matter what kinds of exotic technology we employ, people will still be reading."

BOOK REVIEWS

Charting the route for software use

Software Configuration Management by Edward H. Berners-Lee, Vila D. Henderson and Stanley G. Siegel. 385pp. Prentice-Hall International, London.

ANY book which addresses interests ranging from pocket calculators like the TI-59 or HP-41C, minicomputers such as the PDP-11 and large-scale systems like IBM 370 and Cray 1 array processors, deserves more than casual interest within the industry.

The work under review suffers several disadvantages from a European reader's standpoint as it was obviously directed to-

wards the American market in the first instance.

There are some dated references to the late 1960s and it is the combined work of three authors. The book also requires knowledge of basic algebraic concepts and carries the by-now obligatory quota of exercises.

It is a credit to all concerned - not least the subject matter - that the book survives as an impressive piece of work despite these preliminary reservations.

The theme the authors emphasise is discipline as it is applied to the development of

software products, and the methodology known as Software Configuration Management is developed fully.

Anyone wishing to develop his or her knowledge about software and the art of development management would be at home with this volume. For those who are uncertain about the concept of SCM, the authors suggest an apt analogy between the methodology and using maps.

One may arrive at the chosen destination without the benefit of a map, given time, luck and "gas". But armed with a map, the

journey is accomplished on time and minus wear and tear.

The key to SCM appears to be identification, and getting the basic labelling correct eliminates many subsequent problems.

At the same time, rival publishers should take note of the general presentation. The book is well and interestingly written, clearly illustrated and exceedingly well indexed.

Perhaps this is only what is to be expected in a book subtitled *An Investment in Product Integrity*.

ALAN SIMPSON

Two approaches to Cobol work

Structured Cobol for Data Processing, by Norman Lyons. 326pp. £6.50. Glencoe Publishing Co Inc, 17337 Ventura Boulevard, Encino, California. British publisher: Collier Macmillan, Stockley Close, Stockley Road, W. Drayton UB7 9BE. Tel. No: 08954 40651.

STRUCTURED Cobol for Data Processing is obviously a book written with beginners in mind and Norman Lyons opens with brief notes on the growing importance of computers. He follows with basic information on programming languages, data processing vocabulary and symbols in a well-illustrated chapter.

The author's approach to Cobol is to start with the Procedure Division, thus enabling the student to write simple programs from an early stage. Inevitably, many rules have to be mastered in close succession but these are clarified by appropriate diagrams or examples. Chapters 3 to 5 cover sorting, arithmetic and conditions. Lyons tackles the SORT statement earlier than many manual-writers because of its essential part in so many systems and leaves the discussion of number systems - sometimes a very early topic - until chapter 6.

Chapters 7 and 8 introduce the student to the Identification, Environment and Data Divisions, thus allowing him to write complete programs rather than relying on the standard divisions supplied hitherto.

Chapters 9 and 10 examine the OPEN and CLOSE statements, input and output, file organisation and the PERFORM statement. The last part of the book is devoted to some of the more advanced features of Cobol, some of which are not always covered in beginners' manuals.

New points are illustrated using a file of information on university

students, thus creating both realism and continuity.

Exercises following each chapter test the student's understanding but it is a pity that the answers are available only in the separate instructor's manual.

The index, appendices and margin notes make finding information easy. The book is thus a sound introduction for the beginner and a useful reference manual for the experienced programmer.

A Programmer's Guide to Cobol, by William J. Harrison. 232pp. £14.20. Van Nostrand Reinhold, 135 West 50th Street, New York, NY 10020. British publisher: Van Nostrand Reinhold Co Ltd, Molly Millars Lane, Wokingham, Berkshire.

A PROGRAMMER'S Guide to Cobol is not a book for beginners. Harrison makes it quite clear that the reader will need to have a fairly extensive knowledge of Cobol if he is to benefit.

Furthermore, he is not attempting to teach the syntax of Cobol but rather to show how it can be used to the best advantage in producing programs written in good style.

The author takes the precaution of including an appendix giving an outline of the basic rules of Cobol for those who need to revise them.

His first two chapters also include some basic material on data processing and language structure. The remaining 13 chapters take one topic at a time, and begin with a review of fundamental procedures, and study the features of Cobol that are not always used to maximum advantage.

Each topic is treated independently.

Harrison attempts to keep his comments machine independent but where necessary refers to an IBM system. He refers the reader

Future of the printed word

The Future of the Printed Word. The Impact and the Implications of the New Communications Technology. Edited by Philip Hills. £10. Frances Pinter, London.

IN one sense, the accumulated message of this collection of papers is an anti-climax, but it does provide a healthy corrective to the wider and headier excesses of our electronic enthusiasts.

The apparent anti-climax is a simple point, made in the opening articles "no matter what kinds of exotic technology we employ, people will still be reading."

That judgement comes from John H. Strawn of Automation Industries Inc of the US and makes a comment by Dr A. K. Kent, director of Information Services for the UK Chemical Society. Dr Kent considers that the world of scientific and technical publishing in the late 1990s will not

differ much from today, though it will be more disorderly. It will be more disorderly because some 12 authors whose expertise covers publishing, librarianship, information science, computing and education have been invited to contribute analyses, each in his own area.

It is as though a published record were being kept of a conference that never was and the editor asks readers to participate in the conference discussions.

Should there be enough takers - and he thinks the response justifies it - he promises to publish them as a second volume.

The views expressed in the book differ in detail and presentation but demonstrate a good deal of consistency.

The papers are certainly well worth reading as they provide a sensible perspective.

ISRAEL BERKOVITCH

Making ZX80 clear

The ZX80 Pocket Book, by Trevor Toms. 128pp. £4.95 inc. p&p. Phipps Associates, 3 Downs Avenue, Epsom, Surrey.

IN a relatively short time, the ZX80 personal microcomputer has become well known to the public. Trevor Toms attempts to expand the knowledge of its present users and the potential market.

Although not intended for the absolute beginner, the book reviews the ZX80 Basic, giving hints and examples for its efficient use, and highlights some of the inconsistencies of Basic which in themselves are not confined to the ZX80.

On the basic 1K RAM system, program size is obviously critical. Useful hints and examples are provided to minimise size by, for example, efficient use of GOSUB and minimal use of REM statements. The command set is also clearly described in alphabetical sequence.

BARRY FISHER

Database design

Database - Structured Techniques for Design, Performance and Management by S. Atré. 442 pp. John Wiley and Sons.

COVERING topics like data, database administration, data dictionaries, data modelling, database design, database implementation and performance problems, this book provides a useful and well presented theoretical review of the whole topic.

It includes and exemplifies the hierarchical, network and inverted

file database management systems, providing a helpful comparison.

The basic approach to database management systems based on IBM-compatible systems, due to the author's personal experience. Nevertheless, the book is suitable for anyone studying databases and their design.

Database administration is explained fully, and the author envisages a comprehensive and very senior position for this function.

A. J. THOMAS



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In this review of the application of viewdata/videotex technology in business, by MIKE ALDRICH, current and potential uses are discussed, cost effective applications are highlighted and future development is predicted.

How viewdata is being used in business

VIEWDATA is a word that means many things to different people. The word itself is rapidly becoming obsolete. A new word, "videotex", is increasingly being used as a substitute.

In order to avoid confusion, some definitions might be useful.

Firstly, what is viewdata/videotex? It is a new communications medium.

What is its purpose? The purpose of viewdata/videotex is to improve communication between people through the use of a computer-assisted message system for sending and receiving messages of varying degrees of complexity (the physical part of viewdata). It has an ability to apply computer processing to the message themselves, enabling a chain of events to be set in motion automatically by the computer through understanding the meaning of a message (the logical part of viewdata).

Viewdata/videotex is interesting because it is of universal significance - anyone can use it. It can be installed in the home and in business, and it is relatively inexpensive - most organisations can afford it.

Viewdata/videotex technology consists of the ability to display textual and graphical information on a modified domestic television, in a multi-colour, stylised format, where the television is connected to a telephone line and from there to a computer.

The television user communicates with the television either by voice command or keyboard command. Thus, a television can be switched from News at Ten to viewdata terminal at the press of a button. It can automatically dial into any suitably equipped computer in the world and the user can access and retrieve information, or merely leave a message for a friend.

The television can be equipped with certain additional features to ease communication - a printer to avoid jolting down information from the screen; a memory on the television to store and recall useful information without recourse to the computer; and a directory of telephone numbers of most frequently used services. In due course, the television will also be equipped for local computer processing in much the same way as personal computers. The potential use of the technology is wide ranging. At the simple level, it is the first new participatory communications medium since the invention of the telephone.

The implementation of this technology is in its infancy. The lead role has been taken by British Telecom in its development of a public viewdata service called Prestel. Many other postal and telecommunications authorities around the world are pursuing similar programmes.

However, Prestel is but one possible use for viewdata technology. The great advantage of Prestel is that by its very existence it has created a wealth of knowledge and expertise in a new communications technology that is now ready for commercial exploitation by UK companies on a grand scale.

A viewdata industry exists in the UK and covers the technology of viewdata - design and implementation of hardware/software

systems - as well as its media, i.e. editorial layout and control, presentation, even colour usage, graphic arts and human interaction. Through Prestel, an embryonic information breaking business has been created exploring new frontiers in values of information and service in a new Information Society.

Prestel began as a mass market viewdata information dissemination system aimed at the domestic residential market. It is apparent that the domestic residential market is not ready for profitable penetration yet, and Prestel is

The great advantage of Prestel is that by its very existence it has created a wealth of knowledge and expertise in a new communications technology that is now ready for commercial exploitation by British companies on a grand scale.

therefore seeking to address the business market for information dissemination systems.

However, the business market is also being addressed by high technology, cost-effective private viewdata systems that Prestel cannot be expected to compete with. The market is fortunately big enough for everyone.

The magic word in private viewdata systems is integration. The integration of viewdata technology with processing, networking, data management, and other computer-assisted human interface devices provides a multi-media communication system of unparalleled power and flexibility. Command an action from the viewdata television, print the result from a terminal printer; send a message from a hand-print terminal and display it on a viewdata television 10,000 miles away; type and edit a letter on a word processing system and send it to a viewdata television in the home. This integration is already available.

The uses of viewdata in business are in three main areas of interest: information dissemination; action or transaction systems and education or computer assisted learning systems. Dwarling all of these use areas is the issue of integration both at a systems level and at a business level.

Prestel is an information dissemination system that is a stand-alone system. Integration with other types of information dissemination systems is not yet feasible. However, there already exists a private viewdata system, the Rediffon R1800 Series, which can be integrated with existing information dissemination systems, enabling a computer with a computer terminal to speak a viewdata-style message. The structure of the database on the existing computer would remain unchanged.

Because it is possible to integrate viewdata technology into existing computerised systems, the possibilities with action or transaction-oriented systems are many. Viewdata windows can be bolted on to existing real time systems enabling the use of the real time system by inexperienced users.

In the education or computer-assisted learning application where the viewdata terminal is used for instruction, it is possible to integrate instruction, pacing, scoring, remedial instruction, revision and query response in one instruction system, at a cost per terminal hour that is trivial compared to previous CAL systems.

For all these uses, the colour television terminal is significantly less expensive than a conventional computer terminal and because of its television attributes, it is considered to be less threatening in the behavioural sense. With computer devices, reductions in cost and lowering the knowledge threshold of the user result in the multiplication of market potential.

In any enterprise there are two arenas for viewdata usage - internally and externally. The internal usage can be triggered by a number of considerations: Viewdata can be used to provide wide-ranging computer assistance to non-expert computer users (most of the people in the enterprise); it can be used as a replacement for older technologies (e.g. classroom teaching) and it can create new levels of shared understanding within an enterprise through its capability to communicate effectively, quickly and cheaply.

The glittering prize in improved internal communications is the potential increase in managerial span of control. Reporting structures, and ratios can be changed and managerial productivity can be radically improved. At the same time, the application of viewdata and other integration communication in the office will improve white collar productivity.

Viewdata is considered ideal for managerial workstations, because of simplicity of use and its communication potential both for the individual and for groups of people. A television screen can be viewed by a number of people from four to eight feet from the screen.

The following is an example of integrated communication and recording systems: Meetings are held and minutes are taken. Invariably, there are action items in the minutes. A manager needs to be assured that action items are undertaken by himself and his subordinates are completed on time as agreed. Management's span of control is often restricted.

A simple application for new technology might be to type the minutes of a meeting on a word processor, automatically print the minutes, distribute them by person by using a teletype or telex machine, and then use the minutes to check the progress of action items. The minutes can be stored in a central file (a logical part of the computer storage) and each recipient can be alerted to the minutes of the meeting and the minutes can be stored in a central file (a logical part of the computer storage) and each recipient can be alerted to the minutes of the meeting and the minutes can be stored in a central file (a logical part of the computer storage) and each recipient can be alerted to the minutes of the meeting.



The author, Michael Aldrich (left) is managing director and chief executive officer of Rediffon Computers Ltd., the second largest British-owned computer manufacturer. Aldrich graduated from university in 1962 with an honours degree in history and spent his entire career in the computer industry. He is the author of over 40 published articles on computer computing. He has lectured widely in the UK, Western and Eastern Europe, the Middle and Far East. Aldrich is a professional member of the British Computer Society and a member of the British Institute of Management.

in business in the UK is clouded by mystery of confidentiality agreements. Much is going on behind closed doors. There are reasons for the confidentiality agreements. Firstly, customer integration plans have competitive trading impact. Secondly, most systems are at the formative stage with impact on staffing and procedures still to be resolved.

The scope of activity is formidable. Customer integration through viewdata by-passes existing business communication interfaces with customers - shops, branches, mail, telephone. Integration can take place either at domestic or business level. Viewdata shopping will impact on all outlets during the 1980s. A wide range of goods will be available to a collection centre in the home is already a common proposition.

The Information Service business also identified much of the US as Viewdata Value Added Networks, has already and Brokers are selling information and services. There is a tremendous potential for neighbourhood computer centres providing a keystone business and offering education services. The use of a disc for data storage will open doors to the high street university - the ultimate home computer machine where the student can viewdata television for home and reference from home.

The attachment of video recorders to viewdata terminals with integrated electronic provides a unique mixture of text, audio and video communication. Mixed media communication will appear during 1981. In the video disc will offer even more remarkable opportunities.

For the next two years, the thrust of business viewdata will be in international information dissemination, information processing and computer-aided instruction application. Thereafter there are wide possibilities in entertainment and personal computing.

Developments with terminals are continuing. Integrated chips - a new generation of integrated mass-produced chips - viewdata products - will be available in 1981, and will provide flexibility of the system, providing local processing, better peripheral management, a few more terminals, and a few more function viewdata terminals. Again, the market possibilities are substantial.

The pace of development in viewdata is being driven by leading-edge users and profitable applications. Viewdata systems are being developed for a wide range of systems for major business users, but also for more broadly based users. It is the integrated nature of the technology that will succeed in business. Prestel will have served its purpose in the UK, but its true glory will be in the development of a new communications technology that is now ready for commercial exploitation by UK companies on a grand scale.

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Dr ISRAEL BERKOVITCH EXPLAINS HOW COMPUTER TECHNIQUES ARE HELPING TO TAKE 19TH CENTURY RISK OUT OF THE 20TH CENTURY BRITISH MINING INDUSTRY

MINOS makes the colliery a safer place



MINOS in action again - this time at the Bagworth conveyor belt transfer point.

IT WAS probably 3,000 years ago when the ancient Chinese started scratching coal out of the ground. I have not seen any estimates of when the same process started in Britain but it is certain that coal-mining developed into an organised industry in this country during the 16th century.

This ancient industry has made enormous strides in recent years and computers have begun to contribute greatly to growing reliability in mining operations. Where, in fact, can computers be employed usefully in our pits and what do they achieve?

In the 24-year period since nationalisation, the mines have been mechanised increasingly with great benefit to both human safety and productivity.

The single over-riding impediment facing the industry at the moment" in the words of NCB Director of Mining Research, Peter Tregelles, is that of machine performance.

It is in this area that computers are being applied in order to realise the full potential of the mechanised equipment.

Monitoring

In more general terms, the researchers were able to report last month three major MINOS applications, firmly established and available on a commercial basis.

Monitoring and controlling conveyor belts and coal bunkers for coal transport underground at 27 collieries, with five further systems ordered.

Monitoring ventilation for management at five collieries.

Coal face monitoring through FIDO at 14 collieries with 13 further systems ordered. When these are completed a total of 110 coal faces will be covered by the system.

Associated with this programme is obviously another dealing with instrumentation. Besides all that is demanded of instruments in any job for use with computers, notably reliability, these have to be "pitworthy" - standing up to severe conditions of use and electrically safe for use in mines.

They include an ultrasonic belt load monitor which is a big advance over belt-weighers. For deep bunkers, radar has been applied to monitor the level of coal where depth exceeds 50 metres.

To determine the percentage of stone in the coal on a belt, nuclear techniques are being examined.

Misalignment

An ingenious idea for giving an absolute indication of the position of the pit-edge, independent of the existing indicator, has involved using magnetic stripes on winder

ropes, a valuable safety measure detecting slip or slack rope.

Further monitors measure conveyor belt speed, detect tears and misalignment, and determine any slip between the drive and the belt - an important source of heating that can lead to fire.

The principle is that a proximity sensor counts the holes in the roller driving the belt and another counts those in a roller driven by the belt. The difference measures slip.

So far, the MRDE claims that introducing MINOS has meant that fewer men are needed on the transport systems, delays are reported accurately and the equipment helps greatly in diagnosing areas needing maintenance attention.

When the transport systems are maintained properly, they now give "95 per cent clearance availability to the face".

Where FIDO has been applied, it has given a stimulus to keeping machines in use; machine delays have been reduced and over half last three minutes.

The ventilation systems are at an earlier stage of application, but have shown a marked superiority in comprehensive safety surveillance over previous systems of monitoring.

Inconceivable

Short-term developments include improving transducers and introducing programs to optimise bunker use and to segregate store handling.

FIDO is being improved by providing editing facilities, eliminating overlap problems or spurious delays and including data on machine position which managers have requested strongly.

NCB chairman Sir Derek Ezra has commented that the new technology is providing the means to measure in ways that are intrinsically more reliable and to calculate variables that would have been inconceivable without present processing power.

Nevertheless, MRDE has begun further work to equip MINOS Mark 2 with distributed processing and intelligent outstations giving

local control of individual plants.

In turn, this calls for work on the transmission systems which may extend up to about 10 kilometres in a sixth colliery; integrating control systems into multi-colliery complexes could raise this figure to 30km.

Transmission systems will consist of local links at 600 bits/sec, colliery links for monitoring and control at 4800 bits/sec and inter-colliery links at 64 kbit/sec.

Apart from meeting the need for intrinsic safety of equipment used in mines, MRDE uses standard telecommunication techniques and protocols and is beginning work on optical fibre transmission.

Interrogation

Using secondary computers for management information has been under study for several years; these were used to collect and store summary data for long periods both for interrogation when needed and allowing managers to analyse longer-term trends.

This is also growing into a man-

agement information system, based on computer disc storage with versatile presentation and interrogation facilities, now under test and assessment.

About six collieries have computers installed at their coal preparation plants, where coal is graded into different sizes and "washed" by specific gravity into different grades corresponding to different amounts of self-forming incombustible matter, in the coal.

The aim is to optimise plant availability. Associated with this project is development of new monitors for determining ash, sulphur, coal moisture and its calorific value.

Discussions about technical improvements underground tend to lead to the key question of when it will be possible to automate coal-mining completely and withdraw men from potentially danger areas.

On this, expert opinion is understandably cautious but work is in progress on a microprocessor system mounted in a coal shearer.

It will steer the power-loader automatically in the vertical plane, monitor and control the advance of

the coal face and monitor how the machine is operating (what is called "the machine health").

Aspiration

What happens on the coal-face is so complex dynamically, however, that successful full automation is thought to be an aspiration for the more distant future.

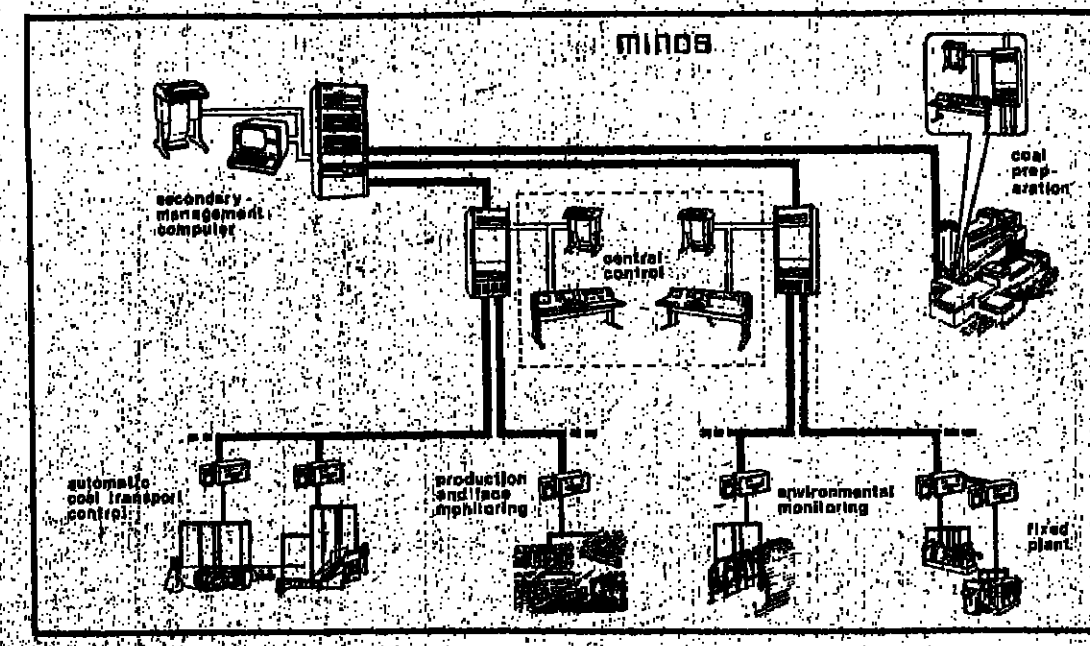
Meanwhile in many other, though more limited ways, the computer is helping to make our coal mines safer and more productive.

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SHAPE TECHNICAL CENTRE

THE HAGUE, NETHERLANDS

A NATO technical/scientific establishment has vacancies on its international staff for:

SCIENTIFIC ASSISTANT

(Post 1)

DG.46,060 = tax-free*

to participate in analysis, program design, coding and other programming activities needed to develop large real-time, multitask application programs on mini- and microcomputers.

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(Post 3)

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Education to higher Secondary level or equivalent professional experience. In addition, applicants must have experience with at least one real-time operating system (preferably RSX 11), at least one higher level language, and assembly language programming. A good knowledge of English is required. Additionally for Post 2 ONC/HNC or equivalent in electrical engineering is preferable.

Post 3—

Education to GCE A Level or equivalent, with at least 3 years' relevant experience in the use of higher level languages such as Pascal, SIMULA, FORTRAN. A knowledge of other modern software development tools and techniques would be advantageous. A good knowledge of English is also required.

* This is the gross annual salary for non-Dutch married officials with children.

Candidates who are nationals of one of the NATO countries are invited to send full details of training, experience and personal data to: Personnel Officer, SHAPE Technical Centre, P.O. Box 174, 2501 CD The Hague, Netherlands, indicating for which specific post(s) they are applying.

datascene

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BERKS.

Our client is an international manufacturer within the computer industry. They are seeking to fill two positions and require that applicants possess a good knowledge of COBOL and should be familiar with commercial applications in a real-time environment. There is a wide range of company benefits, including a profit sharing scheme paid bi-annually, a half month's salary pre-Christmas payment, plus a substantial company package for the right people. R.4982

£8,500

Analyst/Programmers & Programmers

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CITY

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We are in contact with three banks in the City who are seeking programmers with upwards of eighteen months' experience in BASIC +, BASIC + 2, or AIMS. Successful applicants can expect to be working in a batch and real-time environment on applications such as foreign exchange and eurobonds. Opportunities for career progression are excellent and the employment packages offered are without equal. R. GEN

Analyst

HERTS.

IBM

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RPG II Analyst

Programmers

IBM SYS. 32, 34, 38

LONDON CITY

to £10,000

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IBM 370 and 4331

MIDDLESEX

to £9,000 + BONUS

A finance company in Middlesex urgently require IBM Programmers to complement their existing team. A minimum of 6 months' experience is required although candidates will preferably have some 2 years. In either case experience of CICS is essential. A knowledge of DL1 and financial applications would be advantageous. In return they offer salaries of £9,000 together with a bonus, free BUPA, non-contributory pension and life assurance and luncheon vouchers. D.4929

Analysts and Programmers

ICL 2900

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to £9,000

A leading insurance company in a pleasant Surrey environment seeks both Analysts and Programmers for their 2900 machines. Applicants should have a wide knowledge of 2900 machinery with preferably experience of insurance or pension applications. Salaries of up to £9,000 are supplemented by a wide variety of financial benefits which includes a mortgage subsidy after an introductory period. The situation is within 3 minutes of the main-line station. D.4654

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ICL 2900 and IBM CICS

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The company has personnel resources of over 15,000 employees located in over 100 offices worldwide and also owns its own remote processing service, INFONET.

CSC UK was formed in 1969 and is perhaps best known for the development of large projects such as the London Airport EDP Scheme (LACES) and the Royal Navy's Command, Control and Information System (OPCON).

Towards the end of last year the company was awarded a number of similar projects, as a result of which several extremely interesting and challenging positions have been created. These are urgently required to be filled and applications are therefore invited from candidates who feel they fit one of the following categories:—

Systems Design Consultants

£11,500-£17,000 depending on experience

The salary range above clearly indicates that these positions offer tremendous scope to good people. We will expect to see extensive large systems design experience, thorough understanding of how database and on-line systems are built and co-ordinated and — most importantly — evidence of being capable of working from the higher conceptual levels down to detailed design, on large projects.

At least one of the positions available requires extensive knowledge of ICL 2900 hardware and IDMS and associated software, whilst Data Analysis (or similar) skills are essential from all candidates.

Comms Software Designers

£10,000-£13,500 depending on experience

We seek talented senior team members, people who can conceive and design networks incorporating packet switching, voice and data transmission etc. Software expertise is a vital ingredient in the equation, so experience of software modelling, software package enhancement or amendments must be present.

An important point to note is that pure specialists in comms or telecomms will not be suitable. Certainly communications knowledge is of primary importance but individuals must have a broad and comprehensive view of systems design and therefore be capable of ensuring that the communications side of a large distributed system is properly designed and implemented.

The quoted salaries are at the top end of the normally available market rates and reflect the fact that CSC is a highly professional and reputable company. Naturally, benefits are in line with this and include BUPA, company pension scheme and a car leasing scheme for senior staff. Season ticket loans are also available and are interest free and relocation expenses can be made available if appropriate.

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If you feel you would be interested in an overseas assignment and are willing to work hard and make a positive contribution write to:

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Perhaps your current appointment is fulfilling your career needs, but nevertheless, you are interested in future opportunities, alternatively, you may be actively seeking a new appointment now.

You may be looking for:

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In the first instance, telephone Mike Linford or Dick Glazebrook on: 01-405 0442. Or send a brief CV for their attention to the Michael Page Partnership. Any approach will be treated in the strictest confidence.

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CONSULTANT**
£16,000 - Married Status

A DP Consultant is required to carry out an initial study of the feasibility of introducing systems into the MOD and the Services. The areas to be studied will cover all aspects of accounting including stock, payroll, purchases, cash receipts and payments, personnel and establishment records, fixed asset utilisation and maintenance records and inventory management.

The successful candidate will recommend the policy to be adopted to effect any proposed introduction of DP and draw up an outline plan for this. He will advise on the selection of hardware and software and assist the MOD and Service Managers in the development and implementation of approved DP projects.

The study is expected to take twelve months but an initial report, recommending future policy, is required within two months. The consultant will report through a joint service committee, to the Under-Secretary, MOD.

Applicants should have extensive computer systems and O and M experience, a record of successful project management, and be familiar with DP equipment development. Service experience would be an advantage but is not essential.

Employment offered on married status, one-year contract. Salary £16,000 inclusive of benefits and gratuity plus free accommodation and car. Fifty days' leave, of which forty days may be taken after five six months, remainder on completion of contract. Salary is inclusive of pay during leave. Air passage provided at start and end of contract with return air passage for leave. Similar air passage provided for wife and entitled children.

Telephone or write for application form to Tessa Beck, Astral Recruitment Associates, Astral House, 17/19 Maddox Street, London, W1R 0EY, 01-405 1010.

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£7,800-£8,500
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Communicating with the mainframes we have a Series/1,
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Currently we are looking for IBM Systems
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free travel on L.T. services and valuable concessions on B.R.

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PO.2 (6-10): £12,537-£13,629

The Local Authorities Management Services and
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a stimulating challenge. Essential are proven computing
achievement in a senior position, ability in negotiating and
selling ideas, fluency of expression, versatility, and a
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Financial assistance with relocation expenses will be
given in appropriate cases.

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The appointee will be responsible for the overall management control of
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Applicants should be able to demonstrate a successful track record in the
planning, implementation and management of large scale communications
networks and associated business systems, not necessarily in the travel
industry, but this would be advantageous. A mature business acumen and
the ability to implement decisions is of prime importance.

Ten years practical experience in the relevant areas and the ability to
organise and direct supporting staff, plus demonstrative negotiating skills
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Please apply with comprehensive career details, including scope of present
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Computer centre situated in South West London require an experienced operator for the above position. At least two years' experience of Gili is needed for this two-shift only post. J.4813

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This Computer Centre in South West London require a very experienced operator. At least 5 years' experience of DOS/VS is needed for this day only post. G.4920

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BERKS: apply if you have PDP11 or VAX, using Bliss and/or Macro 11, and experience in comms.

SURREY: tell us what you've done with Real Time Assembler on minis or Intel 8080 Series.

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Applications, in no particular order, include: military systems (radar, command and control, flight simulation, etc.), industrial systems (Process and production control, plant monitoring and the like), image processing, Real Time operating systems, compilers, networking, message/packet switching, language processors.

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If you can sell or service MINI COMPUTERS, VRC's or WORD PROCESSORS, our expanding client which markets the OLIVETTI range would like to talk to you.

Computer Sales

Salesmen with a good track record in computer sales will enjoy the challenge of selling OLIVETTI systems and W.P. equipment in a very receptive market. Earnings are high and paid tax free, whilst a period spent overseas can only enhance long term career opportunities.

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It is a prime aim of the company to offer a high level of technical field support which is developed parallel with sales. Technicians would ideally already have had experience of OLIVETTI, but training can be arranged. Practical knowledge of mini computers, VRC's or word processors is essential.

The company is solidly backed by powerful joint European and Saudi interests with a history of aggressive marketing. Three year renewable contracts are offered, single or married status, with excellent earnings potential paid tax free in Saudi, bonuses, comfortable free accommodation, car, good holidays with free travel, school fees and medical scheme.

Candidates are expected to have had experience directly related to or in competition with the OLIVETTI product range. Interviews may be arranged with a Capp Director in London or Manchester — telephone (24 hour Ansaphone) or write with full details quoting ref: CW105-1D.

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01-886 9693

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We are looking for a Salesperson who has computer or systems experience to sell the latest range of Texas Instruments microcomputers.

We are a well-established office equipment company committed to the growth of this new and exciting industry.

A good basic salary plus commission (guaranteed during training), company car and expenses.

Write or telephone for an application form to Mr. P. Millard — Creaseys of Hertford, Castlemead, Hertford SG14 1LH. Telephone: Hertford 54949.



NORTH STAFFS POLY DEPARTMENT OF COMPUTING FULL-TIME AND TEMPORARY POSTS AT SENIOR LECTURER/LECTURER GRADE II IN COMPUTING

Applications are invited for posts of Senior Lecturer/Lecturer Grade II in the Department of Computing. Candidates should be able to offer a specialist area of computing at Honours Degree level such as Data Processing, Systems Analysis, Information Systems, but applicants with other teaching experience in computing will be considered. In addition, applications are invited for temporary posts of Senior Lecturer/Lecturer Grade II in the Department of Computing. Candidates should be able to teach Data Processing and Systems Analysis, but applicants with other teaching experience in computing will be considered. These latter two posts are for a period of two years only but there may be the possibility for transfer into full-time posts later.

Salary scale:
Senior Lecturer — £8,852-£10,539 (bar) — £11,295
Lecturer Grade II — £8,012-£9,702

Application forms and further details may be obtained from the Deputy Director (Staffing), North Staffordshire Polytechnic, College Road, Stoke-on-Trent ST4 2DE.



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PROGRAMMER IN OIL
Salary: £8000 - 9000 + Benefits & Pension
Location: Aberdeen
Background: The oil business is expanding rapidly and the computer workload is building up. We require a programmer to provide support for the commercial area of our work.

COMMERCIAL RSTV V7
BASIC Micro
Languages Payroll
Word Processing Financial Modelling
Book Control

Experience in one or more of the above areas is preferred but not essential. Experience in more than one of the above areas would attract a higher salary.
Phone 0224 574600 NOW (440)

MEMO
TO: **COMPUTER FIELD SERVICE ENGINEERS**
FROM: **PRIME COMPUTER**
SUBJECT: **YOUR NEXT APPOINTMENT**

VENUE
THURSDAY 19th FEB
Regent Centre Hotel
Carburton Street, London W1
(12 noon-7pm)
FRIDAY 20th FEB
Queen's Hotel
Lyndford Road, Farnborough, Hants.
(12 noon-7pm)

or telephone Paul Rasmussen NOW
01-572 0933 PRIME

(440)



IBM SUPPORT PROGRAMMER

Hampton To £11,000
A very major IBM Service Bureau, part of a multi-national organisation is looking for a presentable, verbal professional able to conduct sales courses and demonstrations to clients. Past experience should include COBOL, FORTRAN or PL/I under OS with JCL knowledge would be an added advantage. Absolutely super perks and prospects look excellent.
CW 18/6 Michael

DATA COMMUNICATION SALESMAN MESSAGE SWITCHING SALESMAN

W. MIDLANDS & S.E. ENGLAND To £18,000 + Car
One of the U.K. market leaders in communications hardware with a turnover of £12 million last year is expanding fast. It now requires five more salesmen to meet market requirements for their very successful products of modems, multiprocessors, network analysers and message switching systems (the message switching salesman should live in the Western Home Counties). ALL their salesmen reached QUOTA LAST YEAR so apply now and enjoy a truly successful career.
CW 7/1 Michael

ANALYST PROGRAMMER

W. LONDON To £9,000
If you have 2 years' + COBOL programming experience with some analysis, preferably with knowledge of CICS, DL/I and DCS, then ring now for more details of the above position. This pharmaceutical company has recently installed the latest IBM 4300 machine. Benefits offered are excellent, including free meals and free BUPA.
CW 7/2 Tricia

SENIOR COBOL PROGRAMMER

SURREY To £10,000
A major food manufacturing company requires a Senior Programmer with 2 years' + COBOL experience. Their installation is ICL large 2800 under VMEB. You can expect the usual large company benefits in addition to a generous salary for the right person.
CW 7/3 Tricia

IBM SYSTEMS PROGRAMMERS

LONDON & HOME COUNTIES £8,000 to £11,000
I bet you never knew how popular you were? All you need to have is a technical IBM background with relevant IBM DOS/VSE, OS/VS or MVS experience to command a very good salary. We now have vacancies in E. LONDON, N. LONDON, W. LONDON, N.W.1, HANTS, CROYDON, KENT and the CITY. Remember that good applications programmers with the right interest in the systems side would be very welcome. Several companies offer excellent perks including relocation, package, subs, mortgage, etc.
CW 7/4 Tricia

IBM OPERATORS

S. COAST To £8,000 Inc.
THREE companies on the South Coast using 370 or 3031 machines with OS/VS1 and MVS and many company benefits require operators with 2 years' or more operating experience. All have 3-shift systems and subsidised facilities.
CW 7/7 Simon

IBM OPERATOR

THE CITY £6,000 Inc.
A large insurance company in the City using IBM 3031 with OS/VS1 and MVS require an operator with 1½ or more years' experience and a knowledge of JES2 and JCL. Extensive insurance benefits with bonuses, including free lunches.
CW 7/8 Simon

PROJECT LEADER

W. LONDON To £11,000
A major international chemical company requires a Project Leader with at least 5 years' DP background. The applicant will have experience of leading a project and of on-line systems design. Involvement with DATABASE, CICS and DL/I are advantageous. There are the usual large-company benefits which are excellent.
CW 7/7 Patricia

CONSULTANTS

C. LONDON To £20,000 to £18,000
Now is the time to get in on the ground floor of a large government contract (based around ICL 2800) that will extend your experience and provide a worthwhile step in your career development plans. As part of this international consultancy handling this contract, you will be involved in a major project requiring the highest standards of professional skill. CW 7/8 Michael

CONTRACT PROGRAMMERS/ANALYSTS

UNIVAC	1100 COBOL/PLI	S. COAST	3 MTHS
UNIVAC	1100 DMS 1100 T.R. EXP.	S. COAST	3 MTHS
IBM	370 PL/I MVS CICS	PERKS	3 MTHS
IBM	PL/I OS/VS1	KENT	3 MTHS
IBM	360 COBOL DME VME	LONDON	3 MTHS
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IBM	RYST PROG	HOLLAND	3 MTHS

Phone frame for details

The Programmer's Phone-in

Burroughs Machines, Croydon, are engaged in the design and development of a new range of microprocessor based terminals. Experienced Programmers are now needed to complement existing teams working on one or more of the following projects:

Compilers
Interpreters
Communications
Diagnostic Programming

Assemblers
Operating Systems
Software Tools
Terminal Product Software

These positions include working on micro computer based systems and/or mainframe (B6700) computer. Experience of using Burroughs equipment would be preferable but experience on other machines would be acceptable. You can find out more about these opportunities and about us by phoning the Personnel and Programming Department representatives on Monday 16th February from 5 p.m. to 9 p.m. or alternatively by calling our Personnel Department during work hours on

01-686-0355

Systems Software Technician

DUBAI : OIL INDUSTRY

Dubai Petroleum Company operates a large offshore production facility in the Arabian Gulf and is installing several automation systems which require software support.

The successful candidate will maintain the operating system, diagnostic and application programs and make changes to programs as operational needs develop during all phases of design, commissioning, debugging and maintenance. The major system to be maintained is a monitoring and control supervisory system for offshore platforms. This includes

PDP 11/44 computers, over 30 RECON III microprocessor based terminal units, key board printer, dual disc drive and controller, serial line interface, graphic coloured CRT and a communication controller.

The job is primarily office based but will require frequent visits offshore and travel to vendors in the U.S.A. as needed.

Candidates will have suitable backgrounds in engineering or systems and must have real time programming experience on a similar system.

The position will carry excellent salary, allowances and benefits. These include family accommodation, personal effects shipment, education allowances, non-contributory pension scheme, medical insurance, 28 days annual leave with flight costs to U.K., plus two 7 day interim leaves per year with flight and living allowances.

For an application form please telephone Mrs. V. Slack, Personnel Officer, on 01-493 5955 (24 hour answerphone), Continental Oil Company Limited, Park House, 110 Park Street, London W1Y 4NN.



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HP 3000

£8,000+
Location: Hants

COMPUTER MANAGER

Expanding Book Distribution Company, retailing and wholesaling, requires an energetic person to take control of their recently installed Computer Systems and all future developments. He/she will be responsible for a staff of ten.

Using the HP 3000 series 3, the application revolves around Stock Control at several locations and takes in such technology as Lightpens and OCR and Print. The extension of point of sale units in retail outlets is planned.

The applicant should have HP 3000 operational and COBOL programming experience, and be looking to extend his/her managerial skills.

Appt. for the benefits include 4 weeks' holiday (increased after two years) and pension scheme.

For an application form please contact:
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HARRIS BOOKSHOPS LTD
16 Bedford Way, Hants, Hants GU14 2LJ
Telephone Area (0429) 8822

Engineer-Analyst

£8,500 negotiable HORSHAM, Sussex

Electrowatt Engineering Services is a large international firm of consulting engineers active world-wide in power generation and associated energy supply projects. The UK subsidiary is seeking an additional Engineer-Analyst to participate in varied engineering assignments, many of which have a significant analytical content. Applicants should have good academic qualifications either an engineering subject or mathematics and a strong computational background. About 5 years' experience in either a research, analytical support team, or an engineering environment would be suitable. An ability to work together with an interest in working within a multidisciplinary engineering team, are essential. We are able to offer a professional and stimulating working environment in a very pleasant part of the country. An attractive salary, which will depend upon qualifications and experience, is supplemented by fringe benefits which include a non-contributory pension scheme and a generous holiday entitlement.

Please send a brief summary of qualifications and experience, quoting reference DYN/9/81, to:

Electrowatt Engineering Services (UK) Ltd
Electrowatt House, 18 Coler, HORSHAM, West Sussex RH12 1EX

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611



NO CONTEST

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THE BENEFITS. Optional Flexi-time, paid overtime, luncheon vouchers, free life assurance, pension and health schemes, sports and social club, six monthly reviews, generous holidays and highly competitive salaries.

THE COMPANY. Croydon based management and data services division of a multi-million pound organisation that is totally committed to data processing. They are a long-standing IBM user and in addition to their 370/148 and a 4341 running under DOS/VSE + VM with CICS, DL/I and VTAM they are intending to install a second 4341 this year.

THE CICS SPECIALIST c£11½K THE JOBS

The company is an established CICS user and currently has a network that encompasses Europe. They are now extending into a SNA environment for integrated office systems utilising 8100s. The successful candidate will have a sound knowledge of CICS and for the right person the position of team leader is available.

SYSTEMS PROGRAMMER c£11K

With a multi-system site such as this you will be working on the installation and development of all the latest systems software available. For example current projects include the extension of time sharing facilities as provided in their VM APL service to include VM/SP. Candidates should have a good knowledge of DOS/VSE and if lacking experience in VM full training will be given.

We don't believe any other company could offer you more

Contact Diane Oubridge on 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

SYSTEMS PROGRAMMER

GERMANY

to D.M. 60,000

We have been retained by our client, a leading manufacturer of dye stuff, etc., to recruit an experienced Systems Programmer for their installations in West Germany.

The company has IBM Hardware using a command facility through an 8100 to a 3031, installed in two locations. The In-House applications language is COBOL running under DOS/VS operating systems, a change to MVS is planned.

The successful candidate should have at least 2 years' Systems Programming experience, with a good knowledge of operating systems and assembler. He or she should be familiar with MVS. A background of COBOL and DB/DC (DL/I, CICS) would also be useful.

The ability to speak German is not necessary, but would be a natural advantage. The company offers excellent conditions of employment, including a competitive local salary plus assistance with relocation and initial accommodation.

Central Computing Consultants

8A Lower Grosvenor Place, London SW1W 0EN

01-834 7105

Telex 918582



JACKSON ASSOCIATES

A leading computer software house and computer bureau on the south coast urgently require

SENIOR PROGRAMMERS

SALARY UP TO £3,500

PROGRAMMERS

SALARY UP TO £7,500

Plus fringe benefits
We are seeking a team of professional software staff working on ICL ME29 mainframe computers for application relating to the commodity market.

The successful applicants will have a minimum of two years' experience in an ICL 2900/1500 environment using COBOL, and the Senior Programmers must have been involved in the implementation of at least one major system. Experience in a TP or Database environment (IDMS) would be a distinct advantage but not essential.

Please contact the Personnel Department on 0243-787721 for an application form or send your CV to:

Mrs. S. C. Jackson
The Personnel Director
JACKSON ASSOCIATES LTD
44/46 West Street, Chichester
West Sussex PO18 1BN

UNIVERSITY OF GLASGOW
SOCIAL PAEDIATRIC AND
OBSTETRIC RESEARCH UNIT

RESEARCH ASSISTANT/ COMPUTER PROGRAMMER

Applications are invited for the post of Research Assistant/Computer Programmer in the above Unit. The Unit is engaged in a wide-ranging programme of research into the social and epidemiological aspects of maternal and child health. The successful candidate will be responsible for the design, development and maintenance of computer programs for the analysis of research data. The position is available for 3 years. The salary will be on the scale of £10,000 to £12,000 per annum. The successful candidate will be required to undertake a research project in the field of social and epidemiological aspects of maternal and child health. The successful candidate will be required to undertake a research project in the field of social and epidemiological aspects of maternal and child health.

Further particulars may be obtained from Dr. F. A. Boyd, Social Paediatric and Obstetric Research Unit, 122, Cathedral Avenue, Glasgow G12 8LS to whom applications together with curriculum vitae should be sent by 15th March 1981. Successful candidates will be invited for interview.

ABC TRAVEL GUIDES LTD.

a member of



require an experienced

DATA CONTROL CLERK

for their Computer Production Control Department at Dunstable. Duties include setting-up and maintenance of Job Control, problem-solving and some work submission via an ICL 7503. The RJE is linked to ICL 2860 (DME) and 2972 (VNE/8) computers.

Applications are invited only from those with a comprehensive knowledge of all aspects of JCL and priority will be given to anybody demonstrating their ability with JOSTICS and/or SCL.

As one of the world's leading suppliers of timetable data to the airline industry, much of the work is geared to important deadlines, therefore, the ability to work under pressure for extensive periods is essential. There is no shift work at present and overtime is payable at the usual rates.

The importance of this interesting and demanding position is reflected in the salary which is currently £5518 (minimum) per annum and will be reviewed on April 1, 1981.

For an application form ring:

Pam Brooker, Dunstable (0582) 600111; ext. 267

Subsidiary of a Major UK Group PROGRAMMERS

**SENIOR
ANALYSTS**
**Excellent Salaries
+ Bonus**
(RAND 13,000-16,000)



Specialist Computer Recruitment Ltd

South Africa! Is this the Opportunity of your Lifetime?

We have been asked to identify Data Processing professionals, who have the drive, ambition and enthusiasm to create a new life and career for themselves, and in so doing compliment the dynamic systems team, about to commence a major phase of their computer development.

Our Client is a subsidiary of a UK market leader in the glass industry, they are based in the city of SPRINGS, South Africa where they have two manufacturing plants (one is only 3 years old). The installation utilizes ICL 2946 with 7500 comms network and have a number of commercial systems implemented e.g., Accounting, Order Processing and Stores. You will be involved in the next phase of development which will include; Production Planning and Forecasting, Personnel Information, plus a number of smaller projects.

As a Programmer you will require a minimum of 2 years practical COBOL experience, have a mature attitude and a strong desire to progress your career through D.P.

As a Systems Analyst you will have a minimum of 4 years in data processing, ideally with a programming background and have the ability to take the challenge of Project Leadership in a development environment.

The Company offers in addition to excellent salaries, bonus (guaranteed at 8%), contributory pension scheme, 27 days holiday (including statutory), full medical insurance, full relocation expenses, free accommodation on arrival and assistance in the purchase of your own home.

South Africa offers world renowned medical standards, high class housing reflecting excellent value for money, low income tax base rate, VAT at 4% and of course the Rand buys the same as the pound, but you earn a lot more Rands; finally a superb climate in a beautiful Country.

For further details contact; ADVISING CONSULTANT Peter Brown on 061-833 0427 or 061-724 9376 (evenings and weekends)

Interviews to be held in the UK.

London 01-935 0671 3 Mandeville Place, Wigmore Street, London W1M 5LB
Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA
Brussels 010 322-640 7151/71 Avenue Louise 327, Boite 4, 1050 Bruxelles



Senior Computer Operator Days only

IBM System 38 -

**The scope for your ambition.
The rewards for your expertise.**

Here at Merck Sharp and Dohme we're rather proud of our computing environment, and we have every right to be. At our EDP Department in South Hertfordshire, we have recently installed a large IBM System 38 - one of the first companies to do so. The challenge of working on this major new system, combined with our existing IBM System 3/15D is just one good reason why we can mean a great deal to the professionals who join us.

As our Senior Computer Operator you'll become fully involved in all aspects of computer operations, working closely with the Manager, and sharing the general responsibilities. We will of course expect you to possess the necessary practical operating experience (at least 2 years) and you'll be trained to adapt these skills to the System 38.

If you have the ambition to respond to the potential we're offering, you'll find this is the perfect opportunity to develop your expertise in a fast moving and highly rewarding way. Our benefits package is first class, and in addition to an excellent salary includes:

* no night shifts * pension scheme * free life insurance * subsidised restaurant * sports and social facilities.

So, if you think you can meet our needs, contact Lyn Barrington, Recruitment Officer, Merck Sharp & Dohme Ltd., Hatfield Road, Hemel Hempstead, Hertfordshire, Tel: Hemel Hempstead 67272.

UNIVERSITY OF EXETER LECTURER IN COMPUTER SCIENCE

Applications are invited for a lectureship in the Department of Computer Science, Exeter, from October 1, 1981.

Preference will be given to qualified persons working in the following areas of computer science: operating systems; artificial intelligence with applications in automated deduction, and mathematical symbol manipulation; systems analysis; data bases and information retrieval; design and implementation of programming languages; distributed computing systems. However, well-qualified persons in other areas of computer science are also welcome to apply.

Commencing salary will be within the range £505-£9470 p.a. on the scale £505-£11675 p.a.

Further particulars may be obtained from Mrs. Doreen Birch, Northcote House, Queen's Drive, Exeter, EX4 4QJ, to whom applications (in copies) should be forwarded by March 8, 1981. Please quote reference No. 3203.

QUEEN ELIZABETH COLLEGE Reading (University of London)

Lecturer in Computer Applications

Applications are invited for a lectureship in the Department of Computer Science, Queen Elizabeth College, Reading, from September 1, 1981. Preference will be given to qualified persons working in the following areas of computer science: operating systems; artificial intelligence with applications in automated deduction, and mathematical symbol manipulation; systems analysis; data bases and information retrieval; design and implementation of programming languages; distributed computing systems. However, well-qualified persons in other areas of computer science are also welcome to apply.

Further particulars may be obtained from Mrs. Doreen Birch, Northcote House, Queen's Drive, Exeter, EX4 4QJ, to whom applications (in copies) should be forwarded by March 8, 1981. Please quote reference No. 3203.

DALROTH computer and partners personnel

Abu Dhabi

**ANALYST/PROGRAMMER or
PROGRAMMER/ANALYST**

c. £12,000 tax free. Plus free accommodation, etc.

Last year we appointed a Systems Analyst and an Analyst/Programmer to our banking client in Abu Dhabi. They have now been promoted and a further Analyst/Programmer or Programmer/Analyst is required. The Bank's installation has progressed and expanded and in addition they supply computing services for an associated construction company.

The Bank has an NCR CRITERION on-line system and development is in COBOL. Applicants should have had about four years' plus experience, some of which must have been in COBOL. Ideal would be a knowledge of NEAT/3 and/or banking, financial accounting or inventory applications.

The Bank offers, in addition to tax-free salaries and free air-conditioned accommodation, 30 days' annual leave, UK paid annual trip, free medical care, etc. Ideally we would like single status applicants but married status could be considered.

For further information please write, or telephone Jenny Dalrymple-Hay on 01-493 2947 (office hours) or Beaconsfield (04946) 4579 (evenings and weekends) quoting reference No. CW 8844.

DALROTH & PARTNERS LTD., 4 HALF MOON ST., LONDON, W1

Holland

A highly respected Systems Consultancy based in Holland requires experienced Dutch-speaking personnel to maintain and develop new business. This successful Company which is part of one of the world's largest independent computer systems consultancies, has a solid and reputable client base covering all aspects of computing. They are interested in attracting the following personnel:

- (1) Senior Systems Analyst/Project Leader with ten years in commercial computing. Experience in Database System and Cobol is essential.
- (2) Senior Database Consultant must have in-depth expertise of

Database Development (preferably I.D.M.S.) and ON-LINE applications.

- (3) Senior Analyst 6-10 years' commercial design encompassing Database Systems and Cobol.
- (4) Programmer/Analyst, with a solid Cobol background with exposure to Transaction Processing and Database Systems.

It is important that applicants are adaptable, articulate, neat in presentation and possess a high degree of technical competence. This is a highly reputable organisation implementing top level management for many years. For further details please contact Eddie Howard.

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**LONDON/HOME COUNTIES/SOUTH
SALARIES £6,000-£12,000**

We have a large number of openings for people with scientific or avionics expertise. These opportunities are wide and varied and some involve a proportion of overseas travel. Candidates should hold a degree in a scientific discipline and have experience in some of the following areas:

SOFTWARE DESIGN ★
REAL TIME MINI/MICRO
SYSTEMS ★ AVIONICS
AND DEFENCE
SYSTEMS ★ ASSEMBLY

LEVEL LANGUAGES ★
FLIGHT SIMULATION ★
MATHEMATICAL
MODELLING.

These appointments are placed throughout the above locations and all are with reputable established companies. In some cases a company car is provided.

For further details please contact Eddie Howard.

Mini Based High Technology Software Engineering Hertfordshire

Automation Systems, part of Kent Process Ltd., are a young dynamic company specialising in computer based Process Control and Telemetry systems. Based in Hitchin, Hertfordshire, with customers throughout the world, they are continuing to develop their sophisticated range of systems and consequently require additional key personnel with expertise in any of the following areas:

- ★ Process Control/Telemetry
- ★ Software Systems

- ★ Real-time Applications.
- ★ Technical/Systems Programming.

This is an excellent opportunity to team up with a highly successful company who are still young enough to recognise and appreciate dedication and determination. Career opportunities are excellent offering variety and scope on projects in the UK and occasionally overseas.

For further information please contact Eddie Howard.

Systems Programmers and Technical Authors UK and Overseas

Here is an excellent opportunity for technically minded individuals with an interest in either systems programming or technical writing. A leading computer manufacturer is now recruiting additional personnel to meet the demands of a rapidly expanding section of the industry. PROGRAMMERS with a minimum of two years' technical experience will be involved in a variety of projects ranging from software design and development through to final testing and implementation prior to general release.

TECHNICAL AUTHORS with some previous experience in the production of technical specifications and software manuals will be required to work in close association with both software design and product test teams. Applicants should be prepared to tackle and solve all manner of problems and maintain a high standard of documentation at every stage. Rapid career advancement is envisaged for those with the right background, qualities and experience. For further information please contact Eddie Howard.

Edmund Howard & Partners

5 Brighton Road, Surbiton, Surrey, England Tel 01 399 9183

01 399 9183

Senior Data Processing Project Officers

Brussels

The Commission of the European Communities wishes to recruit 4 senior staff to promote the European Data Processing Industry and the use of Data Processing.

- Candidates must be University graduates with considerable experience of data processing applications and development projects, with a specialist background according to the nature of the posts.

Posts A and B (Major application, network and software development projects) require

- experience of project planning, cost control and contract negotiation of large-scale projects;
- considerable systems experience and awareness of technological development.

Post C (Harmonisation of public purchasing policies in data processing) requires

- experience as a buyer of systems;
- knowledge of all related matters e.g. legal aspects, specifications of hardware and software, maintenance and acceptance procedures.

Post D (Drafting and negotiating contracts for technical studies and development projects) requires

- experience in contract negotiation;
- knowledge in legal and administrative aspects of contractual matters, and in questions of industrial property.

In addition all candidates must:

- Have an excellent knowledge of one Community Language and a satisfactory knowledge of another;
- be nationals of a member country;
- ideally be aged between 32 and 45 but older candidates whose other qualifications are especially strong will be welcomed. The salary and conditions of employment are in line with the importance of the posts to the Commission and will be communicated to shortlisted candidates.

Please send a detailed curriculum vitae and specify in which post you are interested to:-

Recruitment Division
Commission of the European Communities
200 rue de la Loi, B-1049 Brussels
Please quote reference M/M/1
The closing date for receipt of completed applications is:
13th March 1981.

The Commission of the European Communities

COMPUTER OPERATOR

required for leading magazine publishers

Thomson Magazines, part of the Thomson Organisation, require a computer operator for Circulation Services.

Working normal weekly office hours, you will operate a Micos Minicomputer System - comprising a Data General 3/12 machine, 3 disc drives and 10 VDUs - to meet the wide range of circulation requirements of nearly 50 publications.

To join us you will need 1 to 2 years' operating experience gained on a business-type minicomputer.

A starting salary of £8,000 with discounts on all Group products (including Thomson Holidays), pension scheme, 80p per day LVA, 4 weeks' holiday this year.

This recent installation offers an unusual opportunity to play an essential role in the rapid growth of this new development.

Please contact Malcolm Fordyce, Thomson Magazines Ltd., 23-29 Emerald Street, London, W.C.1. Tel: 404-5531.

UNIVERSITY OF DURHAM DIRECTOR OF THE COMPUTER UNIT

Applications are invited for the vacant post of Director of the Computer Unit.

The appointment will be made on Grade IV for Other Related Staff and on the scale £14,300-£18,710 p.a. plus superannuation.

Applications (3 copies: overseas candidates one copy), must be submitted by 16 March 1981 to the Registrar and Secretary, Science Laboratories, South Road, Durham DH1 1TA from whom further particulars may be obtained.

PROGRAMMERS W. LONDON

1-4 years' experience of Business Data required on Data General. Must be mature with good education.

Excellent salary. Some travel in London and Home Counties. Please contact Douglas Jones or Sylvia Day.

FORCE 8 COMPUTER SERVICES
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01-630 3761

DOX INC.
We are seeking experienced programmers for our London office. Please send your CV to: DOX INC., 100, The Quadrant, London W1.

MICROS BUCKS Software Engineers with micro experience wanted by specialist department of leading supplier of Data Communications equipment. Positions technically oriented, requiring real-time assembler knowledge for production of communications controllers. c £10K	IBM HERTS Programmers, Systems Programmers and Analysts with COBOL or Assembler, IMS, TSO, MVS or Data Manager required to join teams developing highly complex and sophisticated commercial systems. Substantial benefits offered. to £11.5K	PL1 EUROPE Swiss and Dutch opportunities for Programmers, Analysts and Programmers with considerable PL1 experience (minimum 2 years). Some knowledge of PL2 and DB systems would be an advantage. Relocation assistance offered. £12-14K
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COBOL IBM & HP Analysts/Programmers, 2+ years' in commercial environment and COBOL program on IBM 370/4300 or ITP equipment, required for Commercial Systems Group of Major Oil Company, at their West End offices. TP and Database experience also of considerable interest. Excellent company benefits. £8-11.5K	CONTROL SYSTEMS Analysts, Designers and Programmers with 2+ years' Mini or Micro Assembler (DEC, Intel, Texas Instruments particularly) degree in a numerate subject required for design and development of Industrial Control and Automation Systems. Offices in N. Hampshire, relocation assistance given. £8-11K
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DEC RADAR Team Leaders and Analyst Programmers should ideally have PDP 11, RSX 11M and Fortran or RPL2 to join the Simulation division of our Hampshire clients. Knowledge of mapping techniques an advantage. c £10K	2900 VME/B Analyst/Programmers and Analysts, COBOL programming background, required for new project being undertaken by Systems House in Central London. 2 or more years' experience in large I.C.I. 2900s under VME/B required. to £12K	MINIS MICROS Holland-Project Leader and Analysts with real-time mini or micro experience in Message Switching, process control, simulation, testing or similar required by Dutch Systems House. Excellent bonuses and relocation. to £17K
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SYS. DESIGNERS COMMERCIAL Senior Systems Designers with 5 or more years' experience in the design and implementation of large on-line commercial systems (IBM) plus specialist knowledge of IMS needed by British Software House: Lamin Ltd. Initial term overseas (c. one year). Excellent overseas allowances. £9-11K	MILITARY COMMS Analysts and Programmers (graduates with 5 yrs. in TP or on-line environment) required for new networking/comms project. Particular experience sought by our client: military use, definitions, access controls, networking, message switching, etc. Project teams will be based on site in trucks. £8.5-13.5K
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01 373 3063
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Data Control Supervisor

Due to continued expansion in the use of data processing within the Group, we require an experienced Data Control Supervisor to carry out the day to day management of our data control and data preparation functions.

You will have previously had extensive exposure to data control procedures and will be fully conversant with data preparation methods. Your experience will preferably have been gained in an I.C.I. installation and more importantly you will possess the skills to motivate and manage teams of people and lead by example.

This job attracts an extremely competitive salary and fringe benefits.

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JBA

Banking Consultants

London £12,000 - £16,000

This prestigious consultancy organisation wish to recruit senior banking professionals to help maintain the high standard required in their banking division. As Project Managers and Senior Consultants, appointees will be expected to make an immediate and significant contribution to the development of new applications. Applicants must be well educated, ideally possess a banking qualification and be used to working independently. In particular they are looking for technically accomplished individuals who have a thorough appreciation of project control techniques, and feasibility studies, coupled with proven analytical skills and the successful design/implementation of at least two systems.

An excellent salary is supplemented by attractive fringe benefits.
Contact: Margaret Stevens

Software Designer

Near Oxford c. £10,000

This young manufacturing organisation of professional computer controlled recording equipment for sound studios and broadcasting has rapidly established itself as the leading innovator in its field. The software content of its systems is always increasing and will have a central place in the structure and ergonomics of future designs. The Company's expansion means that they now have a vacancy for a Software Designer with proven analytical skills and who has a specific interest in applying computer control to help make machines more usable and effective. Applicants should have experience in real-time control using mini or micro computers and should enjoy working in an independent fashion. Added advantages would be a working knowledge of an ASSEMBLER language and of multi-processor systems. The Company expects to continue its rate of progress and there will always be opportunities for the future career of the successful applicant.

Contact: David Hendry

Banking Analyst

City c. £10,500 + benefits

The London branch of this prestigious European bank is about to embark on a major programme of new applications development and is seeking an experienced Systems Analyst to play a key role in this project. Experience must consist of at least 18 months Systems Analysis in a Banking environment coupled with a knowledge of foreign exchange and/or money market applications. Long term career prospects are excellent and a good salary is supplemented by attractive fringe benefits.

Contact: David Hendry

SNA Specialist

Berkshire £12k - £15k

Our Client, well known throughout the world, is developing communications software for a large network and requires an SNA Software Specialist to join the team. Applicants must have a sound IBM software background and be full familiar with SNA Internals. Ability to lead a team would be an advantage. Excellent salary, benefits and career opportunity.

Contact: Jim Baker

Analyst/Programmer

Hertfordshire neg. to £10,000

Our client, a well established marketing company who specialize in sound recording equipment, are currently expanding their D.P. department. They are developing a sophisticated real-time sales and distribution system as well as order processing and general batch, all of which use data base techniques. They require an Analyst/Programmer to assist the Computer Manager in the development and maintenance of their ICL 2904 site. The successful applicant will be required to have a working knowledge of COBOL and be able to work under his/her own initiative. An excellent salary coupled with attractive fringe benefits complete the package.

Contact: David Hendry

Support Analyst

West London c. £10,000 + car + bonus

Following gradual expansion, our client, a market leader in mini and micro based systems, need to strengthen their existing support teams. Responsible for particular customer installations, you will provide full pre and post sales support, client liaison and on-site implementation. A thorough understanding of business problems, an outgoing personality and an eye for detail are essential qualities. Your background should include commercial system design and analysis, preferably in a software house and considerable knowledge of COBOL or BASIC. An excellent bonus scheme plus attractive range of fringe benefits. Contact: Brian Postles

Analyst/Programmer

South London £8,250

Our client, a large international organisation who are component makers to the European industry are currently strengthening their d.p. team and so have a requirement for an experienced Analyst/Programmer. Candidates should have a sound knowledge of RPGII with some exposure to ASSEMBLER gained in either a Univ or IBM environment. Basic Terminal handling procedures would be an advantage.

Contact: David Hendry

JAMES BAKER ASSOCIATES
International Personnel Consultants
32 Savile Row, London W1
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BROADEN YOUR CAREER IN COMPUTERS

As specialists in placing computer people, DML handle some of the most attractive appointments in Scotland. On behalf of various clients we are looking for men and women with experience relevant to these vacancies:

ANALYST/PROGRAMMERS

- Write your own programs, undertake analysis. Realtime experience and high-level language, preferably FORTRAN. BSc or HNC with experience. Central Scotland. c.£8,000.
- A senior appointment in the automotive industry. West of Scotland, c.£7,800. Design, program, test and install projects, participate in feasibility studies. Minimum of two years' systems design experience, ability to program in RPG 11.

PROJECT LEADERS

- For West of Scotland heavy engineering firm. Experience on big IBM machines, MVS and on-line system design. c.£12,000.
- A varied workload in the automotive industry. West of Scotland, c.£9,500 + car. Minimum three years' system design, knowledge of IBM System 34 hardware and programming using RPG 11.

SENIOR SYSTEMS ANALYSTS

- To analyse manufacturing systems for publishing company near Glasgow. c.£8,000. Experience in estimating, inventory control, financial applications.
- Openings at senior and ordinary grade in heavy engineering company, West of Scotland.

PROGRAMMERS/ANALYSTS

Major oil company in Aberdeen can enhance your career through excellent training and growth opportunities. You'll be in the team developing a new online maintenance and materials control system for North Sea oil production. Database experience useful, with degree or HNC, knowledge of COBOL. Exceptionally good benefits. Salary negotiable.

PROGRAMMERS

To write/maintain in PLAN + COBOL, prepare test data, test and debug programs for major West of Scotland heavy engineering group. Salary negotiable.

The above brief details give you a taste of just a few of the appointments we are handling.

Initial interviews can be arranged locally, for further information please contact:

Alan Smellie or Sheila Price on 081-226 8674 or write with c.v. to:

DML Computer Personnel Services
11 Charlotte Square
Edinburgh EH2 4DR
Please quote ref. CW12/2.

SYSTEMS PROGRAMMERS circa £9,000

A leading financial concern has outstanding career opportunities for experienced systems programmers to provide additional systems support in their data centre situated in Kent's Medway area. These positions offer applicants excellent opportunities to work with the following inhouse systems: VM/CMS, OS/VS1, DOS/VS, CICS/VS, IMS, currently running on IBM 3090/48 and 3031 hardware. Candidates must possess a solid grounding on OS/VS1 preferably backed by a working knowledge of VM, BAL, CICS and database systems. The company offers excellent salaries, comprehensive company benefits including an excellent relocation package and a convenient and pleasant working environment.

PRINCIPAL ENGINEERING SYSTEMS ANALYST circa £11,000+

A challenging opportunity has arisen within a leading American engineering company based west of London. The principal functions of the position are to initiate and direct activities pertinent to the development, maintenance and support of technical and scientific computer systems used throughout the company in technical analysis and design; to maintain and, where possible, enhance the company's competitive position with regard to engineering technology. Candidates must possess a BSc in engineering or science with 8-12 years' total experience or 4-6 years as an Engineering Analyst. Excellent relocation is offered where appropriate.

TECH. SUPPORT ANALYST circa £8,500

This position has been created by the above-mentioned engineering company to support the provision of interactive computer services and mini-computer based applications to a high level of reliability. Applicants must possess a minimum of 3 years' DP experience including an understanding of interactive systems. In addition, he/she must be prepared to keep abreast of software/hardware in current use and to provide user training and maintenance of standard/user guides. A working knowledge of APL would be a distinct advantage. Excellent relocation is offered where appropriate.

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Programmers/Senior Programmers

Three years' Cobol experience. Some of these positions also require CICS experience

Systems Programmer

Two years' experience of installing and maintaining IBM operating systems and associated packages (in particular CICS). Assembler programming. MVS experience an advantage.

The requirement is for ADDITIONAL STAFF to reinforce operation of systems on a 2 megabyte IBM 3081 using OS/VS1 which will be replaced in 1981 by two 4 megabyte IBM 3041's operating under MVS. Plans include a major development of our TP network. Other systems used include DATAMANAGER and TESTMANAGER.

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80, Holdehurst Road,
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Tel: Bournemouth 0202 292379 ext. 444

Abbey Life

Computer Shift Control Officer

CARDIFF £9,735 - £11,260

Marketing and distributing gas throughout Wales is a large and complex business, and calls for an increasing contribution from computer services. In fact, to keep ahead of expected demands, we are planning to install new mainframe equipment and to move to a purpose-built computer centre within the next three years.

We need a Shift Control Officer to take charge of one of the four computer shifts responsible for operating and data control. Current operations are based on a twin processor mainframe, handling both batch DP and on-line work via an extensive communications network.

Your responsibilities will include setting priorities, technical and scheduling support, user liaison, and participating in the implementation of the new hardware.

To apply you should have a minimum of five years experience in computer operations, and be working at present in a supervisory capacity. Our computer operations cover a 24-hour, five day week, you will be required to work appropriate shift patterns.

Starting salary is £9,735 including shift allowance, rising to £11,260, and the benefits are those normally associated with a large progressive organisation including, where appropriate, assistance with relocation expenses.

Please write, giving full details of age, qualifications and experience, quoting ref. H44/164/CW to: Graham Moore, Senior Personnel Officer, Wales Gas, Snelling House, Bute Terrace, Cardiff CF1 2UF.

WALES GAS**Univac Computer Operators**

Salary up to £6,000 plus Shift Allowance

Benefits include preferential mortgage terms

The Society requires experienced Univac Computer Operators to work on the Univac 1100/82 System at our Central Site in the Baker Street area of London. Applicants for these appointments should have a good standard of education, must be highly self-motivated and will need to possess at least 2 years' experience on Univac 9000 or 1100 series mainframes, although 1100/80 experience is preferred. The Computer Centre is manned 24 hours per day and, therefore, these positions will entail shift work, for which a substantial allowance is paid.

Benefits
In addition to the advantageous mortgage rate, benefits include excellent Pension Scheme, subsidised BUPA membership, season ticket loan, 21 days' annual leave, social amenities, staff restaurant, etc.

For an application form, telephone or write to:
Mrs. F. H. Wakefield
Senior Personnel Officer
Abbey National Building Society
27 Baker Street, London, W.1
Tel. 01-486 5544. Ext. 477

Closing date:
27th February, 1981



(4424)

SENIOR PROGRAMMER Kaduna - Nigeria

SALARY

\$40,000 per annum including overseas allowances, annual increments and 15% gratuity extra

THE EMPLOYER

The Agricultural Projects Monitoring, Evaluation and Planning Unit (APMEPU) which is an agency of the Federal Government of Nigeria in conjunction with the World Bank responsible for the monitoring and evaluation of seven large-scale agricultural projects.

THE WORK AND EQUIPMENT

A rapid increase in the scale of APMEPU operations is currently underway which includes the purchase of a Mini Computer of one million byte capacity and a full range of associated hardware. In addition Apple II Micro Computers will be used for data entry and processing at project level.

THE REQUIREMENTS OF THE JOB

The successful candidate will have good formal qualifications in computer science and considerable experience in applications and systems programming. Experience of staff management and full-time operation of a computer installation highly desirable.

THE TERMS

The engagement would be for three years. Free furnished accommodation and annual leave passages for employee and family are provided. Kaduna is a pleasant locality with good recreational facilities and schooling for young expatriate children is available. The salary is tax free.

Application should be forwarded to:

Head of APMEPU
C/O MASDAR LIMITED
MASDAR House, 147 Nine Mile Ride
Fitchamstead, Wokingham, Berks. RG11 4HY, U.K.
Tel: 0734 724774. Tlx: 1847507 MASDAR

(4425)

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Formed in 1980, the European H.Q. of a major U.S.A. colour graphics display system manufacturer is expanding its operation and moving to new premises in Hertfordshire.

We need self-motivated professionals who care about job satisfaction. We offer an excellent compensation package with all the usual benefits (car, etc.) experienced sales executives with a good technical background in the computer industry.

Contact: GEORGE ISAACS

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D.P. Consultants

Central London

to £15,000 + car

Our client, a prestigious, international management consultancy, wishes to appoint additional Data Processing Consultants for a variety of U.K. and overseas assignments.

Successful applicants will be given the opportunity to broaden their experience by working with senior management on strategic and operational problems over a range of applications, both in U.K. and overseas.

Ideally you will have a good degree, at least 5 years mixed user and technical experience to include programming, analysis, design and installation. Applications experience should include some of the following: order processing, stock control, accounting, production control, banking, insurance and system audit.

Personal qualities of manner, appearance, disposition and communications skills are vital. The preferred age is between 27 and 35 years. Company benefits, including overseas allowances, are generous.

Applications Consultant

Business Systems

Home Counties Border

£10,000 + car

Our client, a major international supplier of office computer systems, is expanding its support organisation. The Applications Consultant will be responsible for a team of analysts providing a range of pre and post sales support to clients in the U.K. The successful candidate will have a commercial programming background with good client liaison skills.

Applications Analysts £8,000 + car

Reporting to the above consultant, you will be involved in providing support for client applications on a growing range of sophisticated electronic office products. You will have 2 or 3 years experience in commercial programming and a healthy attitude to job flexibility and ambition.

You could not fail to be impressed by the company's range and quality of products.

Apply in confidence to Terry Harvey by sending personal and career details, or contact him for an application form, evenings 6.15-8.15 (02406) 4705 or daytime as below.

HR Harvey Recruitment
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300 Caxham House, 150 Regent Street
London W1R 5LA Tel: 01-734 5351

DP PROJECT MANAGER**Europe's largest process plant project Ireland**

Aughinish Alumina's project in the west of Ireland for a new alumina production plant is Ireland's largest private investment ever and Europe's largest construction project. Alcan, Shell and Atlantic Richfield are the backers.

The DP Project Manager will be responsible for developing from scratch with operating management, the computer and non-computer systems to meet the information needs of the manufacturing process. A number of projects will be under him. Prospects for promotion in either DP or production management are excellent.

To be considered you must have had experience in both programming and systems design and retain a working knowledge of COBOL. Experience of systems for stores inventory is also obligatory. Preferred age: late 20s to early 30s. A salary of around £12,000 will be paid.

Your name will not be released until we have briefed you and you have given your consent. Please write to me, Terence Hart Dyke, consultant in the project.

Business Development Consultants
22 Upper Fitzwilliam Street, Dublin 2, Ireland
Telephone: 180008 Telex: 30284

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With powerful IBM 3031 and NAS 7000 mainframes, usage of micro computers, one of Europe's largest private telecommunications networks and a vigorous attitude towards software/hardware effectiveness, they have created a challenging technical environment.

To provide the most effective level of support to group users and your data processing peers, you should already possess the following experience:

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A working knowledge of IBM utilities.

To those with incisive minds, initiative and proven technical skills, they offer a high level of responsibility and project variety in parallel with this new era of growth within the Group.

In addition they offer an excellent salary and allowance package; four weeks holiday; free BUPA; subsidised restaurant; and are prepared to discuss relocation assistance.

To arrange an immediate and confidential interview contact Dave Scarlett on 01-935 0671 or (evenings and weekends) on 01-540 2500.



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Birmingham 021-236 3781 36-37 Great Charles Street, Queensway, Birmingham B3 3JY.
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA.
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Company Name _____ From _____ To _____
and Location _____ Mths/Year _____ Mths/Year _____ Dates and experience _____

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Signature

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DATE

JPL no 1-12A

PROGRAMMERS up to £7,500 plus London Allowance

The Bank of England requires a small number of experienced PL/I programmers to work at its Head Office installation in the City. Several advanced on-line and batch systems are being implemented or further developed, particularly in the areas of banking and money transmission, statistical analysis and processing and internal administration. The Bank's main systems at Head Office are based on OS/VS1 and IMS. TONE 3 is used for program development.

The Bank offers a good salary plus London Allowance and other benefits. A position would be permanent subject to a probationary period.

Applicants (male or female) must have at least 2 'A' level and 6 'O' level passes as well as 18 months' or more experience in PL/I programming; because of the special nature of the Bank's duties candidates are normally required to be British by birth and of British parentage.

Application forms may be obtained until February 23, from:

The Principal (Recruiting), BANK OF ENGLAND,
Threadneedle Street, London, EC2R 8AH.

(4426)

Immediate Contracts for**Programmers**

D.E.C. PDP. Liverpool £15,000 p.a.
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These are just a few of our current vacancies.

For further details contact:

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01-547 2323

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Targa

LONDON ANALYST PROGRAMMERS to £10500
A very prominent name in the automotive industry is embarking on a substantial development programme for its Honeywell-based system. THREE analysts/programmers are sought, two of whom should have 2-3 years' programming experience followed by 1-2 years' systems analysis. The third requirement is for a person with 5 years' programming and approximately 3 years' analysts including some supervisory responsibility. Excellent company package. Ref: R3227

CITY ANALYST PROGRAMMER to £8500
An opportunity exists for a good Analyst/Programmer to join a well-known BANK in the City of London. A recent addition to the Bank's already impressive range of hardware is a VANG 2200 processor and this particular vacancy offers the opportunity to develop systems for this machine. The programming language is BASIC and applicants should preferably be educated to degree level. The usual BANKING FRINGE BENEFITS apply. Ref: R3234

WEST END ANALYST PROGRAMMERS c. £8500
A leading company in the cosmetics industry seeks experienced Analyst/Programmers with some design experience to work in their expanding D.P. department. IBM 4331 hardware using CICS and TOTAL Database would be the preferred profile for applicants who can expect to be involved with a wide range of commercial applications. Excellent range of benefits. Ref: R3233

VARIOUS RPOG ANALYST/PROGS c. £9000
HELP!!! We URGENTLY need Analyst/Programmers with good RPOG to fill vacancies in SUSSEX (both East and West), MIDDLESEX, SURREY and LONDON. Please call us at once to discuss these opportunities to give your career a change of direction. We are particularly keen to hear from people with MANUFACTURING or INVENTORY CONTROL experience. Ref: R3160/4/76/201/22

CITY PROGRAMMER (BANKING) to £7000
Programmers with upwards of 2 years' experience working in COBOL on FINANCIAL or BANKING applications are invited to apply for a position in the city of London. The latest ICL hardware is used and the usual excellent range of BANKING FRINGE BENEFITS are offered.

W. END/MIDDLESEX SYSTEMS ANALYST to £11000
Ane Analyst with experience in CICS and preferably DATABASE is needed for a large IBM installation. It is essential that applicants really have been involved in a project from feasibility to implementation and have the ability to communicate effectively with management staff in a major company. Conditions of employment are excellent. Ref: R3143/3206

Targa constantly need Programmers and Analyst/Programmers with experience in BASIC, BASIC+, BASIC-2, COBOL, FORTRAN or RPOG. The above vacancies are only a small selection of those on our books.

TARGA COMPUTER SERVICES

6 LIVERPOOL STREET
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Just in case you think we are merely the industry's leading supplier of career guidance for salesmen (to say nothing of sales training and market research), we are currently recruiting candidates for over 100 selling jobs within more than 30 computer companies.

If you are seeking a career rather than just a selling job, contact Alasdair Scott or Alan Williams — we have the experience to understand your needs.

Tel: 01-734 9776

Principal Programmer

Salary £7,210 - £8,965 p.a. or £8,260 - £10,590 p.a.
Vacancy number CW/10/81

The successful applicant will be required to work on projects which utilise data base management techniques. Proven programming ability with at least 2 years experience in Basic Assembler Language is required. Knowledge of IMS/DB would be an advantage.

Senior Programmer

Salary £6,445 - £8,025 p.a. or £7,210 - £8,965 p.a.
Vacancy number CW/11/81

The successful applicant will be required to work on projects which utilise tele-processing techniques. Proven programming ability is required and a knowledge of Basic Assembler Language and CICS/VS would be an advantage.

For either post, suitable training will be given where appropriate.

Initial salaries will be based on experience and will be supported by attractive fringe benefits, including 23 days holiday each year, subsidised staff restaurant and contributory pension scheme. Assistance with re-location expenses will be given where appropriate.

Applications to writing giving full details of age, qualifications, experience, present appointment and quoting vacancy number as appropriate should be forwarded to the Personnel Manager, East Midlands Electricity Board, P.O. Box 4, North RD.O., 398 Coppice Road, Arnold, Nottingham NG5 7HX by Monday 23rd February 1981.

Senior Programmer

Salary £6,445 - £8,025 p.a. or £7,210 - £8,965 p.a.
Vacancy number CW/11/81

The successful applicant will be required to work on projects which utilise tele-processing techniques. Proven programming ability is required and a knowledge of Basic Assembler Language and CICS/VS would be an advantage.

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WORKELECTRIC

Fraser Williams Computer Consultants

Research Appointment in the Nuclear Marine Technology Department of Nuclear Science and Technology. Applications are invited for the following post in the Higher Research Scientist/Research Scientist - Mechanical Modelling.

A new post has been created in a small team working on the development of a mechanical model for a small scale marine diesel engine.

The appointment will be for an initial one year period with the possibility of an additional two-year extension.

Qualifications and Experience: Candidates must have a First or Upper Second Honours degree in a numerical discipline and be able to use the use of computer techniques to solve engineering problems. Candidates for Higher Research Scientist must also at least 1 years' post graduate experience.

Higher Research Scientist - From £8,025 to £10,590 p.a. depending on experience. Research Scientist - From £6,445 to £8,025 p.a. depending on experience.

The Department has excellent facilities for research and development and offers a stimulating and challenging environment. For further details and applications forms please write to: The Personnel Manager, East Midlands Electricity Board, P.O. Box 4, North RD.O., 398 Coppice Road, Arnold, Nottingham NG5 7HX by Monday 23rd February 1981.

COMPUTER STAFF

The Computer Bureau provides comprehensive computer services for Academic Departments and College Administrations. Interactive computing facilities are supported by IBM Digital VAX 11/780 computers and microprocessors. Applications are invited for the following permanent positions:

SENIOR ANALYST/PROGRAMMER (ADMINISTRATIVE SERVICES) - 1 VACANCY

(IRE8,067-IRE8,596)

Appropriate systems analysis experience and knowledge of administrative applications, including financial, recruiting, and an advantage. A knowledge of VSI and CICS would be an advantage. Candidates should ideally be graduates or members of an appropriate professional body.

SENIOR ANALYST/PROGRAMMER (ACADEMIC SERVICES) - 1 VACANCY

(IRE8,067-IRE8,596)

Appropriate systems analysis experience and knowledge of academic computing particularly in the areas of knowledge methods, statistics or data logging is required. Candidates should ideally be graduates or members of an appropriate professional body.

ANALYST PROGRAMMER OR TRAINING ANALYST PROGRAMMER - 2 VACANCIES

(IRE8,773-IRE8,304) :: (IRE8,841-IRE8,006)

The level of appointment is governed by previous experience and qualifications. Trainees will progress to the higher on completion of training. The successful candidates will be part of the Applications Group, and will work in small teams developing and supporting programs covering a wide range of administrative and academic systems. Application forms and further data should be requested from: Establishment Officer, U.C.C. School of Education, 28771, Ext. 2332. Closing date for completed applications Friday, March 6th, 1981.

★ SYSTEMS ANALYSTS ★

Wiltshire
Contract or Permanent

Experienced systems analysts required for a number of assignments at our client developing Major New Systems.

Contact: R. Carr at St Albans (0727) 34301 (24h answer)

Fraser Williams (London) Ltd, 3a Canberra House, 17-19 London Road, St Albans, Herts. or contact Ian Gould on 01-585 6634

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THE SALES BIT

Switching from technical to emotional needs

DURING the past two weeks I have written about the reasons why people buy and how they can decide upon the same product for quite different reasons. This week I would like to put forward another consideration: the relationship between the capability of the product to do the job and its subsequent chances of actually getting the business.

Another aspect of the buying process is its apparent two-level structure that applies equally whatever the product might be. It is as applicable to forklift trucks as it is to buying a pair of stockings. I call it The Technical/Emotional Split.

It is a common occurrence for a salesman to achieve the position of favourite contender on the short-list only to lose the business to an inferior competitive product. More often than not, this is because he has not appreciated the switch from technical to emotional decision criteria which often occurs in the final stages of negotiation.

The buyer has first to ask himself which products are able to do the job at a price his company can afford. This produces the classic short-list which usually consists of several contenders. Having reached this point, the technical evaluation is virtually over and the buyer has greater scope for exposing his own emotional needs.

The reason why so many sales people are able to snatch defeat from the jaws of victory is because they relax when they reach the point of price/performance superiority. They fail to appreciate that the selling process becomes much more critical between the short-list and final decision stages, primarily because the situation not only veers from the technical to the emotional, but often from the logical to the illogical.

"Do you sell stockings?" Good. Do you have size six in micromesh nylon at less than £1 a pair? Splendid! Now let me see, this floral design is rather nice, or perhaps this flush-pink. No, I fancy a change. How about —

A pair of stockings today, a forklift truck tomorrow. The stages of the decision making process are much the same.

TRADER

CONFERENCES

DP in local government

A SEMINAR to be held at the Bloomsbury Centre Hotel, London from March 2-6 will discuss the future role of computers in local government. Issues of interest to local authorities and a general view of the current state of computer technology will be included in the seminar, with a number of demonstration suites of programs. Organised by Venetia, the event will also include the display of the electronic office computer, which has been adopted for use in local government. Details from Venetia, Station House, Harrow Road, Wembley, Middx. Tel: 01-903 9626.

SEVERAL authorities in the microcomputer industry have been brought together for the Computer Software Protection conference to be held at London's Waldorf Hotel on March 3. Speakers will include Mike Gurr, Editor of Practical Computing; John Butcher, M.P. Julian Allason, Director of Applied Computer Techniques and Allan Kohnan, practising barrister and computer programmer. The event will include graphics, technical, applications for microcomputer systems and computer aided design. For further information contact Dr. R. A. Adley, BNGSORT, Computational Mechanics Centre, 125 High Street, Southampton SO1 0AA. Telephone (0703) 21297.

Puzzle Answer

THE key to a fairly speedy placement of the Pringles 14 to identify the Constant itself, from the fundamental formula $(n^2 + n)/2$ for an $n \times n$ grid. This gives 65 in this case, which must obviously be the sum of the top row left-to-right. The square is in fact:

19	23	11	5	7
1	10	17	24	13
22	14	3	6	20
8	16	25	12	4
15	2	9	18	21

FORUM 81 is the IBM Computer Users' Association annual conference. The general theme this year is The Challenge of Tomorrow. The conference will take place at the Royal Bath Hotel, Bournemouth between April 29 and May 1. Speakers include Alex Fletcher, Minister for Industry and Education at the Scottish Office, and John White, deputy managing director of British Telecom. Additional features include an exhibition and demonstration of equipment. Details are available from Mrs. Spedding on 01-551 1643.

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Sales and Marketing
February 26 Issue

If you are looking for sales and marketing professionals don't miss this special Computer Weekly recruitment feature highlighting the opportunities in computer sales and marketing.

Despite the wild claims of others, Computer Weekly reaches MORE SALES AND MARKETING PEOPLE than any computer journal. In fact, we now reach more computer people in all the major job titles than any of the others and as the first "six figure" circulation computer journal, Computer Weekly provides the widest coverage of computer professionals in this business.

Computer Weekly is and always has been essential reading for sales people. Apart from scanning the many sales job opportunities advertised, the editorial coverage, particularly news about competitors and new products, is information they cannot afford to miss. Additionally, the regular weekly "Sales Bit" article incorporated in the recruitment section is high priority reading for sales people.

So if you are looking for experienced sales and marketing people or wish to attract technically qualified people who may have a flair for selling, then the combination of this special editorially supported feature plus Computer Weekly's dominance in this sector of the market, provides the very best recruitment advertisement platform.

Copy deadline is Monday, February 23 although advanced space reservations are advisable.

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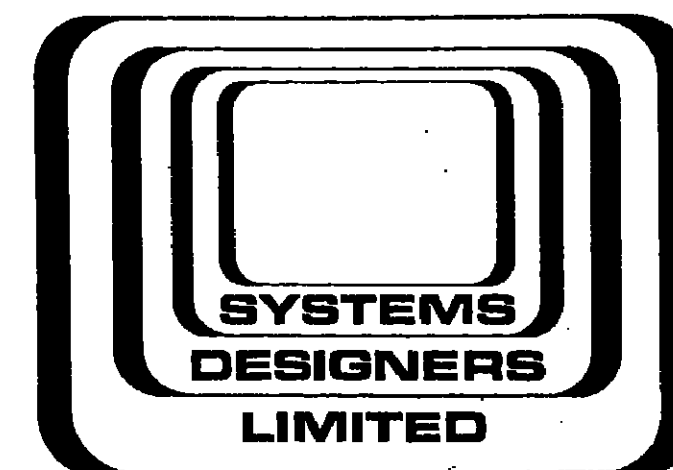
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(4328)

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Director of
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